



SATURDAY, DECEMBER 25, 1875.

Rail Section and Joint Used on the Louisville & Nashville Railroad.

We give this week another one of our series of standard rail sections and joints. We can give no better description than to quote the letter of Mr. de Funiak, Chief Engineer of this road.

Contributions.

A Model Municipal Bridge-Letting.

TO THE EDITOR OF THE RAILROAD GAZETTE:

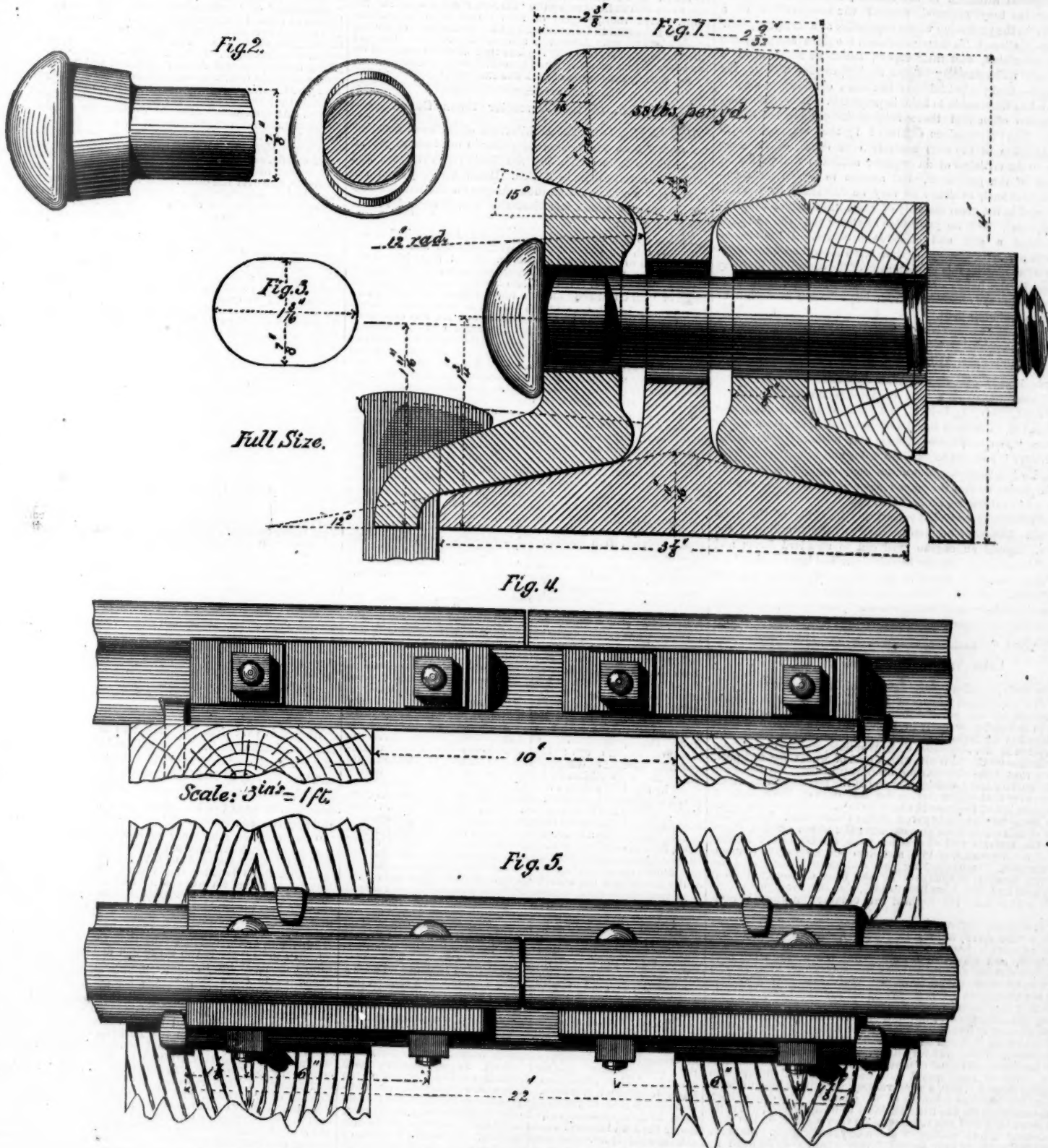
About six weeks ago the City of St. Paul advertised for proposals for the construction of a wrought-iron span to replace the 250 feet wooden span of the present river bridge; and on the 4th of this month such proposals as had been received were duly considered and reported upon as follows:

BIDS RECEIVED FOR ST. PAUL BRIDGE.	
Detroit Bridge Company	\$22,000
Keystone	20,470
American	17,950

the estimate of the engineer, and less than half the strength given them by nearly every other plan presented; and 3d, that the calculation of strains being based on too low an estimate of weight of structure is too small, and the sizes given the iron work according thereto are less than required by the specification.

The plan No. 1 of Mr. Soulerin they object to, that its specifications of strains and sizes are too low; that the floor beams are unsuitable and too weak, and that the lateral bracing is too far apart.

The plan of the American Bridge Co. is objected to, that its specification of strains and dimensions is very far too low, assuming the estimated weight of structure as stated by the plan; that some of the strains and dimensions are put below the standard of the rest, in particular the end braces, which have their strains given at less than half what they ought to be, and the size based thereon far too small; that the lateral



RAIL SECTION AND JOINT USED ON THE LOUISVILLE & NASHVILLE RAILROAD.

Designed by Albert Fink, C. E.

which accompanied the drawing from which our engraving was made:

"As the subject of 'joints' seems to be the order of the day, I inclose you herewith a full-sized tracing of our steel rail section and splices. The steel rails weigh 58 lbs. per yard, and iron rails are of a similar section, but weigh 60 lbs. per yard.

"No description is necessary, as the tracing shows everything.

"The wooden washer, which is creosoted, makes a very effective and cheap nut lock.

"This splice, which has lately been adopted on so many leading roads, has been in use on our road since 1862, and was originally designed by Mr. Albert Fink, then Superintendent of Road Department."

Iron City	"	27,301
Delaware	"	21,000
Cincinnati	"	23,875
Kellogg	"	15,445
H. E. Horton	"	24,500
M. Lammig	"	22,000
L. Soulerin	"	17,280
		18,720
		20,160

ST. PAUL, Dec. 8, 1875.

To the Honorable the Common Council:

Your committee hereby report that they have carefully examined the bridge plans referred to them.

They object to the plan of the Kellogg bridge: 1st, that the channel bars of which the vertical posts are made are not connected together in such a way as to get the whole strength that the posts ought to have; 2d, that the floor beams are too weak, having less than half the strength they ought to have by

bracing in this plan is weaker than in most of the others, and weaker than it ought to be.

The second plan of Mr. Soulerin is objected to, that the sizes are some of them less than required by specification; that the lateral bracing is too far apart; that the floor beams are unsuitable and too weak.

Your committee therefore reject all the above named plans as not sufficiently in accordance with the specification, said specification explicitly providing that all such plans and proposals shall be rejected.

They find that Mr. Soulerin's plan No. 3, as modified by his specification and description, is substantially in accordance with the requirements of the specification, and that his proposal to build said bridge for \$20,160 is the lowest offer accompanied by a satisfactory plan, and they recommend its acceptance.

Your committee find that the difference in the prices of Mr.

Soulerin's plans is fully justified by the difference in the plans themselves.

Your committee would also state in regard to the other plans submitted, but whose prices are above the one whose acceptance is recommended, that they are all acceptable plans and substantially in accordance with the requirements of the specification.

D. W. WELLMAN,
City Engineer.
J. S. SEWALL,
Consulting Engineer.

From which it will be observed that the method pursued by the City of St. Paul in securing a good piece of work at a reasonably low cost is one commending itself to corporate bodies thereof about the country. The City Engineer, whose varied duties doubtless prevented him from giving that special attention to the detailed investigation of such subject as they required, secured the co-operation of a brother in the profession whose reputation as a bridge engineer was unquestioned. To these gentlemen the plans and proposals were submitted, and their report, based as it is upon a thorough understanding of the subject, carries with it the conviction that perfect fairness has been observed to all who have taken the trouble to hand in proposals. How differently do we too often find these bridge-lettings managed nearer home. The Commissioners entrusted by the tax payers with the execution of the work scarcely ever think of referring plans to the criticism of an engineer skilled in that particular branch of the profession, but assume to decide for themselves upon such evidence as may be furnished by the bidders; and in the great majority of cases they select the lowest proposal, with no guarantee whatever that the builder is furnishing a safe and durable structure. It would seem to be imperatively necessary that a law should be enacted by the States, placing this whole matter of the control of highway bridges in the hands of State officers who shall be held responsible in case of accident from imperfection in design or defect in materials used.

ONE OF THE UNSUCCESSFUL BIDDERS.

Why Did it Break?

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your report of a visit to Altoona Shop, "A Journey Westward," Nov. 4, Dec. 11, you refer to an incident under the head of "Practical Results of Systematic Management," as follows: "To show, however, what may be done when railroad machinery is reduced to standard forms and sizes." "Engine 515, in coming down the mountain grade, broke the tender brake, so that the runner was obliged to reverse the engine, and by doing so, broke," etc., etc.

The question arises what caused this breaking of the parts named? The reversing was necessary by the breaking of the brake. Should an engine "reduced to standard forms and sizes" break in the manner therein described by reversing?

Was it caused by defective material, workmanship or construction in its parts. We that are occupied in keeping engines in repair, look for some cause when engines break, under like circumstances, other than reversing.

Dec. 13.

Lake Traffic and Rates in 1875.

The Buffalo Commercial Advertiser of Dec. 14 says:

"The navigation season of 1875 has closed. With a single exception, all the vessels that cleared from the upper lakes late in November or early in December have arrived at their destination or have laid up at some intermediate port. The exception is the schooner C. B. Windiate, which cleared from Milwaukee on the 26th ult. with a load of wheat for this port. Since that time she has not been heard from. No doubt she foundered on Lake Michigan in one of the terrific storms which swept over that region during the last days of November. A complete list of the vessels which have gone into winter quarters here was recently given in the Commercial. In another part of this number we give our annual marine exhibit, showing the arrivals and clearances from the District of Buffalo Creek for the season of 1875, and also the aggregate tonnage for the year. Accompanying this statement is one giving the average monthly freight rate by lake from Chicago to Buffalo on wheat and corn from 1860 to 1875, also the average rate for each season and the highest rate obtained on wheat in each year.

"The number of vessels arriving and departing during this season were 6,278; in 1874 they were 7,447, and 9,959 in 1873. The aggregate tonnage in 1875 is 3,259,899; in 1874 it was 3,641,019, and 4,886,789 in 1873. That the season's business shows a serious decline will not be surprising to those who have watched the course of trade. The wonder is that the loss has not been more marked. We do not hesitate to say that our lake fleet was never before compelled to do business under so many disadvantages. The crops of 1874 were abundant, and a large amount of grain was ready to be moved to the seaboard. But this is all that can be said in favor of the season that has just closed. There was very little foreign demand for our surplus products, and most of that shipped was forced on the markets. This of itself would have had a powerful influence in keeping down freights and preventing an active shipping business. But this was the least of the trouble. The competition of the railways for the little business to be transacted was without precedent, and the remuneration they secured on the traffic seemed to be a matter of secondary importance. Shippers could dictate their own terms if they would only forward by rail.

"Moreover, the movement of iron ore and lumber was lighter than usual. This had the effect to throw into the grain-carrying trade vessels which should have been employed elsewhere. The inevitable result of an excess of tonnage at the grain ports was still further to depress the price of transportation. Everything seemed to weaken the freight market; there was nothing to strengthen it. The prospect at the opening of the season was so poor that a considerable fleet of small vessels were not fitted out, and they continued in ordinary all the year. It should also be remembered that navigation opened late and closed early. The freeze-up in the latter part of November was so sudden that vessels were stopped on their way. The last steamers down from Lake Superior had to cut a passage through six inches of solid ice, and others had to abandon one trip. A propeller was caught by the cold snap in the narrow water above the Detour, and was frozen fast in the channel, where she now lies, her crew having to go ashore on the ice. When all of these untoward circumstances are taken into consideration, it will not seem strange that there were 1,169 less arrivals and clearances at this port in 1875 than during the season of 1874.

"But the average freight rates show the depressed condition of this business even better than the report of the movement of vessels. First, however, we give an exhibit of the average

rate on wheat, and the highest freight obtained, during the ten years ending with 1875, as follows:

	Average, cents.	Highest, cents.
1866.....	13.4	23.0
1867.....	6.8	15.0
1868.....	7.1	13.5
1869.....	6.6	12.0
1870.....	6.2	10.9
1871.....	7.8	18.0
1872.....	11.1	19.0
1873.....	7.8	14.0
1874.....	3.9	6.0
1875.....	3.5	6.3

"Now the average rate on wheat for the month of May, 1875, was 3.9 cents. The average for June was but 3 cents. During July a further decline was witnessed, and the average showed that wheat had been transported nearly a thousand miles for 2.8 cents. But the average for August was 3 mills lower than this even, and in September the 'hard-pan' was reached at 2.4 cents. With the prospect of an advance in rail rates, lake freights improved in October, and an average of 3.7 cents was obtained on wheat. After the advance by rail, lake freights ruled strong, as is shown by the fact that 5.9 cents was paid on the average that month. The highest rate obtained for wheat by rail during the season of 1875 was 6.3 cents."

Criticism of the Worcester Union Depot.

Under the head of "The Architecture of Railroad Depots," we copied from the Boston Advertiser in our issue of Nov. 6 (page 464) a letter criticising the Boston & Providence and Boston & Lowell depots in Boston. Below we copy from the same paper a criticism from the same pen on the new Worcester Union depot, which was illustrated and described in our paper last week:

Taking up now the consideration of this last finished of our three depots, the Union depot at Worcester, we ask ourselves with regard to it the usual questions. First: What is it in the matter of convenience for the purposes it is intended to subserve? The general effect is that of a huge covered space—a piece of "all out-doors" under a roof—with a depot off in one corner. It would be strange, indeed, if much convenience could result from such an arrangement, but let any observant traveler stand anywhere in the train-house and ask himself the question, "What, after all, does it all amount to?" and the above will probably be his answer. Nowhere, perhaps, has the head-house-system been more forced into being and turned out to be worse applied than in this depot at Worcester. It does seem that if they would only take the old shanty depot and set it down between the tracks on the Boston & Albany side, it would be a great accommodation to the public, and no one would care any more for that head-house in the corner. The baggage hands, certainly would greatly rejoice at this relief from trucking baggage back and forth, about 0.08 of a mile. That the arrangement in plan is bad, the underground passages from one side of the depot to the other only serve to prove, among other things. These are cures for diseases of the architect's own making; but, gentlemen, "an ounce of prevention is worth a pound of cure," sixteen ounces to the pound. The present arrangement of the head-house could, it seems to the writer, be improved by making the restaurant and ladies' waiting-room change places, then putting the ticket-office where is now the telegraph office. But those poor baggage-hands, and those abused travelers, male, and even the female travelers—I am afraid they will never experience that thrill that comes from feeling "well done, good and faithful" architect, dispenser to my comfort! What is the effect of form and color upon the beholder? From the outside the effect naturally varies with the point of view. There is no well-defined front and rear to the depot, but calling the single arch and stone vestibule side the front, as was probably intended, its first defect is want of looking like a front. The round head-house structure looks more like an addition in the rear, and the tower is so detached that, more than with towers in general, the question must arise what the thing is really for. The base of the tower is worst of all; it actually repels all advances from the building it belongs to, to be considered as of it and with it. Is there any beauty in the arch? Very little. For an arch to spring from the ground-level at an acute angle gives no pleasure to the eye; the eye seeks for more underground, and is disappointed to find it buried up. This is a well-known rule in architecture, understood by all; it is a defect that the planting of a couple of lions in the corners will alleviate somewhat, but not entirely remove. Better not have it at all. Then the want of a visible abutment, something for the arch to appear to thrust against, is painfully felt by a contemplative beholder. We are told, indeed, that the underground construction of these arches is such that competent engineers have pronounced them safe; but this fact should be written in words of hammered granite on the face of the abutments, not buried in the ground. The fact of the head-house appearing to furnish an abutment for one side of the arch makes the front arch look better upon the whole than the two rear arches. A blank wall, with two segments cut out of it; two huge arches with no abutments and balanced on (what is comparatively) a knife-edge between them; in perspective, apparently so thin that buckling might be anticipated—this is the rear elevation.

The effect is not quieting or good. Upon entering we miss a counterfort, to resist the pressure of the wind, or a fancied tendency, if you please, for the arches to hinge over laterally, like the upstepping of the bridge of a violin. The effect of this is not "good." At some distance off, again, the whole structure sinks, sinks, sinks; the arches become low entrances to some lager-beer vault; the tower now rears aloft beautifully and grandly, but as though exulting over the depression of the roofs below it, and which it appears to have caused. The prominent features of the sides are the huge half-round windows. They are tolerable, as additions to the rest of the design, perhaps the best that could then be done; but those little doors, staggering, as it were, under the load imposed on them by these windows on the city side, are surely not good architecture; nor is the passage of the Boston, Barre & Gardner Railroad, at a skew angle of 15° or 20°, through the arches on the same side of the building. To a mechanical person it is like biting on a grain of sand (and this does not give pleasure) only to look at a train "shinning" through those arches; and in point of fact, if the engineer had not been wise and accommodating enough to interline a short piece of straight track in the curve at those entrances, a long car could not get through probably. The graceful running gable ornament is a pretty relief to the eye on so long a roof, and the pattern slating is equally good for the roof surface. The general style of masonry can only be commended for similar structures, inexpensive and effective. Architecturally there is a lack of decisive adoption of some style or another. The details are not carried out harmoniously, as witness the Roman or Early Gothic little columns and cubical caps, at various points, standing on and projecting beyond their mongrel bases; the Corinthian finish of the interior, approached through a steep-roofed entrance hall, and some other such points. The inside of the train house or houses is, however, a source of enjoyment to the observer of its interior form and color. The brick walls laid up in two durable colors, a buttress and stone cap at each main rafter, the large cast-iron columns, that might serve as models for such pieces, all go to give quiet pleasure. This roof, unlike the Boston & Lowell and

Boston & Providence, which we have been considering, is not an arched roof—that is, does not exercise any horizontal push or thrust upon its supports. To give it somewhat the appearance of such a one, the lower tie-rod of the truss has been raised in the center. This is a very effective way of giving to halls that are covered by this form of roof a high and preventing a depressing look that would be sure to follow from having the tie-rod horizontal. It would have been better still to have had more of the lower panel points raised up; best of all, to have had them all on an even curve. Mechanically, this roof will hardly serve for a model. It might be a question whether the main rafters were not too far apart here, necessitating heavy-looking and bodily heavy parfins, this last attribute requiring the auxiliary suspension from aloft that may be noticed close under the boarding. Many will question the advisability of valley roofs, though this belongs rather to the general design than to roof construction. The skeleton form of the roof truss, however, can be condemned without hesitation. It is surely time that the "gyascutus" or "unheard-of" were banished from the collection of framed structures, or better kept among the unborn. The central part of this truss is a conglomerate of superfluous or indefinite strains, for which there is no necessity, and which confer no advantages. It is generally understood that the Engineer of the Boston & Albany Railroad did not design this roof, and would not have designed one containing such defects; that gentleman's friends can only regret, under the circumstances, that he could not have prevented or modified its execution. An unfavorable effect in the interior is produced by the penetration of the head-house into the train-house, the opposition of tie-rods of the iron roof to the contrary notwithstanding. Here are two roofs over each other, in appearance at all events, and if the false roof in the "valley" reaches over the corner of the head-house, there may be three roof elements, one over the other. All this is far from producing elevating or pleasure-giving emotions. From these we turn again to the inside view of the two large train-houses, as we leave them, and with that bear away our pleasantest remembrances of the Worcester depot.

The moment is opportune for seriously asking ourselves the question whether the head-house system of depots, perhaps first brought prominently into notice in this section of the country by the admirable ground-plan arrangement of the Old Colony depot in Boston, is really the best system to aim for. It has not been so considered in the majority of the reconstructed and large depots built during the last half dozen years, and does not apparently afford the greatest convenience for the purposes a depot is intended to subserve. That is the touchstone of the whole matter, after all. Take a case near at home. Here is the old Springfield depot, which they have taken out of the city seal of Springfield, revamped and half-soled and set up on the old site, as it were, and though accommodating three large lines of railroads, or four, it might be said, is yet, in all that concerns the convenience of the public or of the train hands, to-day a better depot than its more august sister building farther up the road. I think this results mainly from having a beside-track arrangement of rooms and offices. I think generally that this arrangement of ground-plan is most likely to result in the greatest convenience to travellers and train hands: Waiting rooms, that receive passengers at one side and deliver them to the train upon the opposite one; a ticket office that will enable a passenger to take a train within five seconds, if needs be, from the time that he has paid for his ticket; baggage rooms that can receive or deliver baggage within a short distance from the baggage car; restaurants in plain sight of the train; these and similar fixed points in the line of desiderata naturally lead to a beside-track arrangement of depot. And where that cannot be carried out, why, then as near as possible to it is the next best thing. And to return to our mutins, a final comparison of our three great railway depots would stand about thus: In convenience to patrons: Boston & Providence, 1; Lowell, 2; Worcester, 3; although the last two are about on a par in this respect. In affording that pleasure which is to be derived from beauty of architecture: Boston & Providence, 1; Worcester, 2; and Lowell, 3. And may the next one have all the good points and none of the faults of its predecessors.

C. H.
Boston, August 30, 1875.

A Disappointment.

When it is said that the Baltimore & Ohio Company is a large stockholder in the Valley Railroad Company of Virginia, that the local stockholders are bitterly jealous of its influence, and that the city of Baltimore, also a large stockholder, holds the balance of power between the two parties, the following from the Staunton (Va.) Vindicator can be readily understood and appreciated:

"Annually, we might say semi-annually, at every called or regular stockholders' meeting of the Valley Railroad Company, the phantom has appeared of a Valley man tipping cautiously up with a huge boulder in his hand, telling his sympathizing friends not to make a noise as he had a regular dead-fall set, by which the Baltimore & Ohio was to be literally smashed. He would set his boulder in position, and when the time came pull the trigger. Everybody would rush up to the dead fall expecting to find Keyser and Norris and Pendleton literally crushed out, and would find that they hadn't been under it at all. Up to last week the thing was disheartening, but then things changed for the better. Mr. Alexander Rieman was appointed to represent the interest of Baltimore city, and, of course, whichever way he voted would carry the day. The phantom with the boulder appeared promptly, and in view of the unusually strong hopes entertained about Mr. Rieman, an unusually large boulder had been prepared—nothing less than a complete dissolution with the Baltimore & Ohio. Mr. Rieman, a quiet, refined-looking old gentleman, much resembling in appearance the late William C. Rives, of Virginia, came punctually on Tuesday. His manner was mild and kindly, and though a little reserved, he immediately won the confidence of everybody, and the phantom was enthusiastic. Somehow nobody could remember a word that Mr. Rieman had said to indicate that he intended to vote with the Valley men, but a mysterious conviction grew upon the mind of every man that some other man had heard him say something or other that left no doubt about which side he would vote with, and by evening the conviction grew into certainty. The evening session was attended with intense punctuality—everybody wanted to be present at the smash. The man with the boulder was well to the front on tip-toe. Vice-President Keyser, who has been generally looked upon as a man to be feared, was regarded with some pity, being so entirely ignorant that in a few moments he would be sent to Eternal Smash. The proposition to defeat the resolution dissolving the connection with the B. & O. Co., was taken up. Mr. Keyser was called, and, of course, voted 'Aye.' A smile of pity went around. Mr. Rieman was called. It was a supreme moment. He rose from his seat, and carefully arranging his overcoat over his chair, voted—'Aye. Great Heavens! The Staunton proxies broke for the door, and a short time afterwards were found on the mourner's bench at the Methodist church. An awful shadow fell upon the meeting. They had loaded Mr. Rieman heavily, pointed him plump at Keyser, and he had blown out at the wrong end and killed the man with the boulder, who lay stone dead with the rock under his arm. And then to aggravate matters he sat down amid the dead and dying as if nothing had occurred. We have seen the saint-like Deatur Miller, and the imperturbable Keyser, but we have never seen any one like Rieman before."

Richards' Piston Packing.

With the ordinary method of setting out piston-packing rings with set screws and nuts, there is a liability of the latter becoming loose, or of being rusted fast, so that they cannot be moved when the follower is removed. The engravings herewith represent a very simple improvement, intended to overcome these difficulties, which it seems to do in a very satisfactory manner. Instead of set-screws, what are called clips, *F, F*, figs. 1 and 4, are used. These are η shaped, and fit loosely over the lugs, *e, e*, on the piston-head, and bear against the packing springs, *H, H*, to which the clips are attached or held in position by pins, *f, f*. When it is desired to tighten up the packing the clips are forced outward by means of a lever, *I*, fig. 3, and they are then held in this position by means of liners, *h, h*, which are slipped under the clips. These liners are prevented from coming out by the follower-plate, *B*, fig. 2, when it is bolted on the piston. It is obvious that with this arrangement it is impossible for the pressure against the springs to be slackened or for the clips to become rusted fast.

In order to prevent the packing rings from turning, one or more of the springs is attached to the rings by a pin, shown on the right-hand side of the top spring in fig. 1.

This invention is very simple, and seems to commend itself. It was patented Aug. 24, 1875, by Mr. Jackson Richards, of Philadelphia, who may be addressed or seen at the shops of the Reading Railroad in that city.

The Chicago Cheap Transportation Convention.

The American Board of Transportation and Commerce opened its third annual session in the Grand Pacific Hotel in Chicago, Dec. 15. President Josiah Quincy being absent, John F. Henry, of New York, the Vice-President, called the convention to order. He read a letter from Mr. Quincy, stating that he would be unable to attend this convention. Hon. S. S. Hayes, Comptroller of Chicago, delivered an address of welcome. Mr. Henry returned thanks and read his opening address. The Secretary then read his report, which treats of the great decrease in the rates of transportation of late years, which it says is due to the brisk competition between great lines and to the efforts of the friends of cheap transportation to secure lower and more equitable transportation.

A long and interesting paper by the venerable Richard P. Morgan was then read by his son, Mr. R. P. Morgan, Jr., and referred to a committee. It advocated reform in railroad construction and equipment, and argued that with proper adaptation of the roads to an exclusively freight traffic, the cost of railroad transportation might be reduced to something like the lowest water rates.

The Committee on Credentials reported that 300 delegates, representing 16 State and 20 city organizations, were present.

The Committee on Railroads reported through Mr. F. B. Thuermer, of New York, in favor of the construction of a freight railroad from the East to the West at the expense of the Government and to be worked under Government control; recommending the establishment of a "Department of Internal Commerce" in the national government; and the passage of laws by the States establishing commissions like that of Massachusetts; preventing stock inflations; forbidding railroad officers to be interested in freight lines; prohibiting the acquisition by railroads of real estate not needed for their business; requiring common carriers to receipt for quantities received; making it a penal offense for public officials to accept free passes, and forbidding railroads to grant such passes to others than employees; and prohibiting representatives of the people from being retained on either side where the public interest is involved.

At the evening session Ex-Lieut.-Gov. Wm. Bross introduced resolutions in favor of the St. Lawrence route, and Hon. John Young, of Montreal, made a speech on the work done, under contract, and proposed, in improving the Welland Canal, the St. Lawrence River, and the connection of the St. Lawrence with Lake Champlain. He said that the improvements make it possible to carry from Chicago and Duluth to Burlington, Vt., for 12 cents a bushel.

A paper by Mr. H. N. F. Lewis, of the *Western Rural*, purporting to embody the views of the farmers of Illinois was read. It charged extortionate profits, arbitrary increases of rates, and disregard of liabilities on common carriers, and exorbitant warehouse and terminal charges on merchants and warehousemen, and advocated a combination of Western producers with Eastern consumers and exporters.

Untruthful statements in this paper were criticised, and it was then laid on the table.

On the succeeding day a large number of resolutions were introduced in favor of lower local rates and of various schemes for improved water routes and new railroads. Governor Beveridge, of Illinois, made a speech, and Mr. Hornish, of Iowa, advocated the construction of the Forty-first Parallel Narrow-gauge road from the seaboard to the Missouri River by Government aid.

The standing committee on canals reported that large appropriations had been made last year for the construction of important canals, and recommended increased efforts of members to secure Government aid; also, that the improvement of the Hennepin Canal be undertaken at once by the Government, and that the State of New York be earnestly requested to complete a canal of the capacity of the Welland Canal, from Oswego to the Hudson River, and that a committee of five be appointed to perfect these recommendations and send them to Congress and to the State of New York.

The day concluded by a visit to the Board of Trade building, to the Stock Yards, and a banquet at the Grand Pacific Hotel.

On the third and last day some additional resolutions for improvement of water routes were presented. Officers for the ensuing year were chosen. The committee on resolutions presented two reports which gave rise to a long debate, the majority report being finally adopted. The resolutions are as follows:

Resolved, That the great and pressing need of this country is a system of transportation commensurate with the requirements of the age in which we live; that the absence of such system is in a great measure the cause of the present unsatisfactory state of trade and commerce; the reason why our mills and manufacturing are idle; why our agricultural interests are unremunerative, and why thousands of willing hands lack employment.

Resolved, That the presence of a metallic currency is the result of commercial prosperity and not the cause of that prosperity; to restore this circulation it is only necessary for us to supply the means of exporting our grain, bacon, tobacco, cotton, oil, and other products, at prices which will enable us to sell those products to other countries; this would give us commercial prosperity, and its evidence will be a gold circulation; with the return of commercial prosperity all questions relating to the value of different kinds of currency will disappear.

Resolved, That this communication be reached by providing an adequate system of transportation, and that the only way such a system can be provided is by the co-operation of the people, through the machinery of government; that the boundaries of commerce have become so extended throughout the agencies of steam and electricity, that a new and more ex-

tensive class of transportation facilities is needed; that the present system has become not only inadequate to the necessities of the times, but is so filled with defects and abuses that it dwarfs production, stifles commerce, and prevents us from successfully competing in the markets of the world.

Resolved, That the corporate power embodied in our transportation lines has become so organized, consolidated, and combined that it is now able to dictate values to the producers, prices to the consumer, and profits to the manufacturer and trader, and to build up a privileged class, contrary to the spirit of the Constitution of the United States.

Resolved, That the further extension of this power must be opposed by the mass of the people by creating, as fast as possible, a new system of transportation which will insure competition and thus protect the public interest.

Resolved, That as means to this end the National Government should, as speedily as possible, undertake the construction of lines of transportation recommended by the United States Senate Committee on Transportation Routes, or such of them as after survey produce the most favorable results.

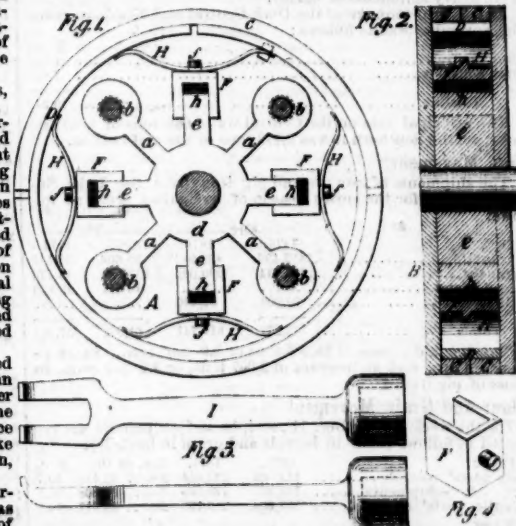
Resolved, That a national railway exclusively for freight, should be constructed from the grain-growing sections of the West to the Atlantic seaboard, to the end that this great territory, with its dense population and the principal distributing cities, both at the East and West, may not be wholly at the mercy of existing railroads when water routes are closed by ice.

Resolved, That if it be deemed inexpedient to have this road constructed and owned by the National Government, that the object may be reached by granting national aid to such a road, and assuming, in consideration thereof, such a supervision and control as will assure reasonable rates of freight forever present combination and consolidation with existing lines and the abuses in construction and management which pervade our present railway system and so heavily tax the entire producing, commercial and consuming public at this time.

Resolved, That whenever national aid is extended to any project in the way of internal improvements, or whenever the construction of any work is undertaken by Government, that the work should be done by contract (in small sections) to the lowest responsible bidder.

Resolved, That a committee consisting of seven persons familiar with and interested in water transportation, and a committee of equal number who are dependent upon improved railway facilities for cheap transportation, be appointed to present copies of these resolutions to the Congress of the United States, and to take such other steps to forward the objects therein advocated as may be in their power.

Resolved, That the internal commerce of the United States has not in the past received the consideration of our National Government that its importance demands; that exceeding in magnitude, as it does, our foreign commerce in the ratio of



more than ten to one, it is entitled to the most careful consideration and fostering care.

Resolved, That in pursuance of this policy, a memorial to Congress from this convention be prepared, asking that a joint committee from both Houses of Congress be appointed to consider the advisability of forming a new department of our National Government, to be called the Department of Internal Commerce, said department to be specially charged with the collection, preservation and dissemination of information bearing upon transportation, and with all other matters pertaining to internal commerce. The joint committee before mentioned to investigate the subject and report at the next session of Congress.

REGULATION OF OUR RAILWAY SYSTEM.

Resolved, That we recommend the several States to enact the following laws for the regulation of railways chartered by them:

1. A law providing a Board of Railway Commissioners to obtain, preserve, and circulate uniform information bearing upon transportation, with power to prescribe a uniform system of keeping railway accounts, and with other powers and duties similar to those possessed by the Railway Commissioners of Massachusetts.

2. A law to prevent stock inflations.

3. A law prohibiting representatives of the people from being retained or employed as agents, attorneys or counsel in any case where the public interests are involved.

4. A law providing that all common carriers shall receipt for quantity, whether it be of grain or other commodities, and to deliver the same at its destination.

5. A law providing a uniform classification of merchandise, and prohibiting the printing of conditions on bills of lading issued by common carriers, which are designed to evade the just responsibility of such carriers.

6. A common law or constitutional prohibition against the consolidation of railroads, by which the power of these great corporations is often greatly increased and their proper control and regulation prevented.

Resolved, That we have no warfare to make upon any of the great industries of the country; but, on the contrary, the very object of this convention is to promote peace and harmony among them by securing an equitable distribution of the benefits and burdens of life, without which there can be no permanent harmony of interests. As the offices of all the members of the human body are essential to its perfect vitality and vigor, so are all these interests essential to a country that would be great and prosperous. It is the true interest of all to promote the interests of each other, and our best policy will be found in the union of all the great industries of the land for the sake of national peace and national prosperity.

ORGANIZATION.

Resolved, That, for the purpose of effecting a more perfect

organization, an executive committee be appointed for each State, consisting of a number equal to the representation of each State in the Federal Congress.

2. That the said executive committees shall have power to appoint sub-committees in each Congressional district in their respective States.

3. That it shall be the duty of these several committees to collect and disseminate such information in their several States and districts as may aid in procuring proper legislation upon this all important matter of transportation, and that their efforts and aims shall be to procure for our people the cheapest means possible.

4. That it shall be the duty of the sub-committee to correspond with their Executive Committee of the State, and State Executive Committees with the National Executive of this body, so that there may be uniformity of purpose and action between the whole.

After the passage of these regularly reported resolutions, one was adopted in favor of the St. Lawrence route, one in favor of the completion of the Northern Pacific, and Texas & Pacific roads; and one urging the State of New York to keep the Erie Canal bottomed out to its maximum depth and to apply improved lock gates; also to consider the enlargement of the canal so as to admit steam as motive power.

The convention adjourned to meet in Louisville next August.

Incombustibility and Impermeability of Wood.

Mr. P. Folacci writes to the *Moniteur Industriel* Belge that he has discovered a method of making wood incombustible and impermeable to water. He uses a composition of

Sulphate of zinc.....	25 parts.
American potash.....	10 "
Alum, with ammoniacal base.....	20 "
Oxide of manganese.....	10 "
Sulphuric acid at 140°.....	10 "
River water.....	25 "
Total.....	100 parts

The wood having been heated to 113 degrees in a boiler, all the other substances except the sulphuric acid are dissolved. When dissolved, the sulphuric acid is added little by little, taking care to mix the materials together until the saturation is perfect.

The wood is piled on a grate in a suitable vessel, with spaces of about half an inch between the different timbers. Then the prepared composition is pumped in until the wood is covered, when it is boiled for three hours. The wood is then withdrawn and piled on wooden gratings, in the open air, to dry and solidify. After this the wood is ready for use.

Mr. Folacci says the wood so prepared becomes, as it were, petrified. Submitted to an intense fire, its surface is carbonized, but very slowly and without flame, so that a slight scratch exposes the body of the wood intact. Floors, doors and staircases of wood so prepared cannot be burned. The flame of petroleum scarcely makes any impression on it. Moreover, it acquires a density that doubles its weight, and it is left entirely inodorous. The inventor recommends the use of wood so prepared especially for ships, railroad cars, telegraph posts, timbers of houses, street pavements, etc.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

Richmond & Danville.—At the annual meeting in Richmond, Va., Dec. 8, Col. A. S. Buford was re-elected President and the following directors were chosen: A. Y. Stokes, John Bardsley, J. Davenport, Jr., Richmond, Va.; Wm. L. Owen, W. T. Sutherland, Danville, Va.; I. N. Dabarry, Strickland Kneass, A. J. Cassatt, Philadelphia. Messrs. Davenport, Bardsley, Dabarry and Cassatt are new directors, succeeding Mr. Herman Haupt, there being three more directors than last year.

Pittsburgh, Washington & Baltimore.—The new board has re-elected John King, Jr., President; J. B. Washington, Secretary; Charles Donnelly, Treasurer.

St. Louis, Iron Mountain & Southern.—Mr. J. E. Clarke, late Train Dispatcher at St. Louis, has been appointed Master of Transportation.

Cincinnati Southern.—The Superior Court, in which the appointment is vested by law, has appointed Judge Alphonse Taft a member of the board of trustees, in place of W. W. Scarborough, who has resigned.

Virginia & Truckee.—Mr. H. M. Yerrington, Superintendent of the road, has been chosen a director in place of A. M. Edgington, deceased, and Vice-President, in place of A. J. Balston, resigned.

Ontario Southern.—The officers chosen for this new company (successor to the Sudus Point & Southern) are as follows: President, S. J. Macy, Sudus Point, N. Y.; Vice-President, Edward H. Wright, Newark, N. Y.; Secretary and Treasurer, Charles E. Carryl, New York.

Congressional Committees.—The following are the House committees having the most to do with railroad affairs, as announced by Speaker Kerr last Monday:

Railways and Canals.—Mr. Jones of Kentucky, Chairman; Messrs. Stone of Missouri, Savage of Ohio, Meade of New York, Schleicher of Texas, Mackey of Pennsylvania, Landers of Indiana, Davy of New York, Henderson of Illinois, Frost of Massachusetts, Hoge of South Carolina.

Pacific Railroads.—Mr. Lamar of Mississippi, Chairman; Messrs. Atkins of Tennessee, Luttrell of California, Walker of Virginia, Lynde of Wisconsin, Throckmorton of Texas, Thomas of Maryland, Phillips of Missouri, Garfield of Ohio, Kason of Iowa, Platt of New York, O'Neil of Pennsylvania, Blair of New Hampshire.

Post Offices and Post Roads.—Mr. Clark of Missouri, Chairman; Messrs. Waddell of North Carolina, Luttrell of California, Ainsworth of Iowa, Walker of New York, McMahon of Ohio, Slemons of Arkansas, Cannon of Illinois, Miller of New York, Stowell of Virginia, Wallace of South Carolina.

The Pacific Railroads Committee is said to have a majority of members who favor the Texas & Pacific subsidy. Mr. Throckmorton, of this committee, was formerly President of the company.

Washington County.—At the annual meeting in Hagerstown, Md., Dec. 11, the following directors were chosen: Wm. Keyser, Galloway Cheston, David Fowler, Edward M. Mealey, Robert Miller, W. S. Kennedy, P. B. Small. The board re-elected Wm. Keyser, President, and P. B. Small, Secretary. The road is leased to the Baltimore & Ohio.

Aurora & Cincinnati.—This company has been organized by the election of the following directors: O. B. Cobb, Thomas Gaff, Samuel D. Langtree, Basil N. McHenry, Aurora, Ind.; E. G. Hoge, Lawrenceburg, Ind.; G. W. Bender, M. E. Ingalls, Cincinnati. The board elected O. P. Cobb, President, Thomas Gaff, Treasurer; O. B. Liddell, Secretary.

Utica, Ithaca & Elmira.—Mr. J. L. Grant has been appointed General Superintendent.

Pennsylvania.—Mr. Persifer F. Smith, late Superintendent of the Lewistown Division, has been appointed Superintendent of Transportation, in place of Hon. John Reilly, resigned. His office is at Altoona, Pa.

Mississippi & Clyde Rivers.—At the annual meeting in North Troy, Va., Dec. 9, the following directors were chosen: H. S.

Foster, Hon. W. J. Elkins, L. Robinson, N. Pettis, Col. O. N. Elkins, Hon. James O'Halloran, Hon. H. C. Wilson, A. A. Brown, A. B. Chaffee, J. W. Currier, J. H. Hamilton. The board elected L. Robinson, President; O. N. Elkins, Secretary and Treasurer.

Indianapolis, Cincinnati & Lafayette.—Mr. H. P. Clough has been appointed General Agent, with office at Indianapolis.

Walnut Valley.—The organization of this new company has been completed by the election of the following officers: President, P. F. Plumb, Emporia, Kan.; Vice-President, J. C. Fuller, Winfield, Kan.; Treasurer, H. C. Cross, Emporia, Kan.; Secretary, T. B. Murdock, Eldorado, Kan.

Chesapeake & Ohio.—At the adjourned annual meeting in Richmond, Va., Dec. 16, the following directors were chosen: John Echols, W. C. Wickham, Virginia; H. E. Farrow, West Virginia; Pliny Fisk, New Jersey; C. P. Huntington, A. A. Low, Lloyd Aspinwall, David Stewart, A. S. Hatch, William Whitewright, Jr., New York. This is substantially the old board.

Texas & Pacific.—Ex-Gov. John C. Brown, of Tennessee, has been chosen Vice-President.

Brotherhood of Locomotive Firemen.—The annual convention in Indianapolis chose the following officers for the ensuing year: Grand Master, J. A. Leach, Port Jervis, N. Y.; Vice-Grand Master, H. H. Clapp, Galesburg, Ill.; Grand Secretary and Treasurer, Wm. N. Sayre, Galion, Ohio; Grand Warden, C. T. Ritchie, Urbana, Ill.; Grand Conductor, J. C. Bernard, Urbana, Ill.; Grand Inner Guard, John Broderick, Hornellsville, N. Y.; Grand Outer Guard, Steven Smith, Jackson, Mich.; Grand Chaplain, Marion Barnhill, Indianapolis; Grand Marshal, O. W. Cutler, Providence, R. I.

The following officers were chosen for the insurance branch of the Brotherhood: President, Phil. B. Posten, Scranton, Pa.; Vice-President, A. M. Plummer, Hornellsville, N. Y.; Secretary and Treasurer, Wm. N. Sayre, Galion, O.; Finance Committee, J. N. Oatman, C. R. Elliott, Wm. Blaine, C. T. Ritchie and L. K. Gleason.

American Association of Transportation and Commerce.—The annual convention in Chicago elected the following officers for the ensuing year: President, John F. Henry, of New York, and one Vice-President from each State and Territory in the Union; Treasurer, F. B. Thurber, New York; Secretary, Frank Gilbert, Chicago; Assistant Secretary, Henry Stotenwalks, Alabama, and an Executive Committee composed of the above-mentioned officers.

PERSONAL.

—Mr. Peter Sandford, well known as a large contractor, died at his residence in Newark, N. J., Dec. 19, at the age of 68 years. Besides city and water-works contracts, his recent works included a part of the Pennsylvania Railroad docks at Harsimus Cove, part of the new shops on the Hackensack Meadows, and the removal of the old Delaware River Bridge at Trenton, for the same company, and an elevator at Baltimore, for the Baltimore & Ohio.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

Year ending June 30:	1874-75.	1873-74.	Inc. or Dec.	P. c.
St. Paul & Pacific.	\$440,003	\$492,570	Dec. \$52,567	10.6
First Div.	405,996	415,631	Dec. 9,635	2.3
Expenses				
Net earnings	\$34,007	\$77,039	Dec. \$42,432	55.1
Earn. per mile	2,129	2,380	Dec. 251	10.6
Per cent. of exps.	91.92	84.36	Inc. 7.56	9.0

The above figures are from the report made to the Minnesota Railroad Commissioner, and cover the line from St. Paul to Breckenridge.

Other earnings are reported as follows:

Year ending Sept. 30:	1874-75.	1873-74.	Inc. or Dec.	P. c.
North Carolina.	\$593,430			
Expenses	409,757			
Net earnings	\$183,673	\$239,256	Dec. \$55,583	23.2
Earnings per mile	2,061			
Per cent. of exps.	69.22			
Richmond & Danville.	\$925,058	\$925,799	Dec. \$741	0.3
Expenses	599,610	597,683	Inc. 1,927	0.3
Net earnings	\$325,448	\$328,116	Dec. \$2,668	1.4
Earnings per mile	4,709			
Per cent. of exps.	64.96	64.55	Inc. 0.41	0.6
Portland, Saco & Portsmouth.	\$411,895			
Expenses	329,770			
Net earnings	\$82,125			
Earnings per mile	8,076			
Per cent. of exps.	78.60			

Year ending Oct. 31:	1874-75.	1873-74.	Inc. or Dec.	P. c.
Queen Anne's & Kent.	\$31,589			
Expenses	27,279			
Net earnings	\$4,310			
Earn. per mile	877			
Per cent. of exps.	86.33			

Month of November:	1875.	1874.	Inc. or Dec.	P. c.
Chesapeake & Ohio	\$54,943	\$42,644	Inc. \$12,299	28.9
Canal	22,451	22,113	Inc. 338	1.5
Expenses				
Net earnings	\$32,492	\$20,531	Inc. \$11,961	58.3

First week in December:	1875.	1874.	Inc. or Dec.	P. c.
Cairo & St. Louis.	\$7,897			
Denver & Rio Grande.	7,190	\$7,403	Dec. \$213	28.9
Mo., Kansas & Texas.	66,712	63,376	Inc. 3,336	5.3
St. Louis, Iron Mt. & So.	119,811	84,230	Inc. 35,581	42.3

Second week in December:	1875.	1874.	Inc. or Dec.	P. c.
Chicago, Mil. & St.	\$175,000	\$167,000	Inc. \$8,000	4.8

Week ending Nov. 26:	1875.	1874.	Inc. or Dec.	P. c.
Great Western.	\$24,464	\$24,552	Dec. 88	0.4

Week ending Nov. 27:	1875.	1874.	Inc. or Dec.	P. c.
Grand Trunk.	\$44,300	\$44,300	Inc. \$0	0.2

Coal Movement.

Coal receipts at San Francisco for the eleven months ending Nov. 30 were as follows:

	1875.	1874.	Inc. or Dec.	P. c.
California, tons.....	134,000	185,000	Dec. 51,000	27.6
Coke Bay.....	29,900	49,700	Dec. 19,800	31.6
Bellingham and Seattle.....	68,600	18,000	Inc. 50,600	280.6
Vancouver's Island.....	55,400	46,800	Inc. 8,600	18.4
Eastern.....	22,500	26,900	Dec. 4,400	16.4
Australian.....	125,100	126,000	Dec. 900	0.7
English.....	45,600	25,300	Inc. 20,300	80.2

Total. 481,000 471,700 Inc. 9,300 2.0
All but an insignificant fraction of this comes by water. The

total is less than a fair week's produce of the anthracite mines of Pennsylvania.

Coal tonnages are reported as follows for the week ending Dec. 11:

1875.	1874.	Inc. or Dec.	P. c.
Anthracite.	431,428	358,300	Inc. 73,128 20.4
Semi-bituminous, Broad Top & Clearfield.	12,967		
Cumberland.	38,632		
Bituminous, Barclay.	9,229		
Western Pa.	10,390		

The coal tonnage of the Pennsylvania Railroad for the last two days in November was:

	Tons.
Anthracite.....	6,095
Bituminous.....	21,751
Coke.....	5,777
Total.....	33,623

The coal tonnage of the Chesapeake & Ohio Canal for November was: 1875, 99,489 tons; 1874, 71,798 tons; increase, 27,691 tons, or 38.5 per cent.

The detailed report of the Philadelphia & Reading Company for the fiscal year ending Nov. 30 is as follows:

	Tons. cwt.
Passing over Main Line and Lebanon Valley Branch....	3,309,957 04
Passing over laterals to ship by Schuylkill Canal.....	740,705 19
Shipped West over Northern Central and Catawissa Br..	265,279 10
Shipped West and South from Pine Grove.....	91,236 12
Consumed on laterals.....	122,061 12
Lehigh and Wyoming coal.....	434,033 08

Total anthracite paying freight.	4,964,324 05
Bituminous coal.	225,881 04

Total, all kinds, paying freight.	5,190,205 09
Coal for company's use—anthracite.	288,048 15
Coal for company's use—bituminous.	27,200 12

Total, all kinds.	5,505,454 16
-------------------	--------------

A decrease of 843,357 tons, or 13.3 per cent. from the previous year.

Railroad Traffic.

The shipments of through freight eastward over the Central Pacific for November was:

1875.	1874.	Decrease.	P. c.
San Francisco, tons.	3,219	4,210	991 23.6
Interior points.	281	1,287	1,006 77.4

Total.	3,500	5,497	1,997 56.3
--------	-------	-------	------------

The leading items of freight this year were: wool, 1,636 tons; wine, 279 tons; tea, 239 tons. Last year in November there were heavy shipments of barley.

The freight tonnage of the Utah Central and Southern roads for November was as follows:

	Tons
Utah Central.....	11,534
Utah Southern.....	7,808

Total.	19,342
--------	--------

The principal item on the Central was 4,665 tons of coal and coke; on the Southern it was 2,772 tons of ore and bullion.

Iron Movement.

The shipments of iron ore and pig iron from the Lake Superior region for the entire season of navigation were as follows:

	Ore.		Pig.	
	1875.	1874.	1875.	1874.
Marquette.....	459,425	439,942	30,600	29,515
Escanaba.....	268,944	290,301	17,085	14,773
Grand Island.....			13,941	13,079
L'Anse.....	70,008	87,498		
Totals.....	798,373	817,741	61,034	57,367

Showing a decrease of 24,369 tons, or 3.0 per cent., in shipments of ore, and an increase of 3,067 tons, or 5.2 per cent., in those of pig iron.

Flour and Grain Movement.

For the week ending Dec. 11 receipts and shipments are reported as follows (flour in barrels and grain in bushels):

Flour.	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.	113,002	126,444	Dec. 13,442	10.7
" shipments.	163,377	120,569	Inc. 42,808	35.7
Atlantic ports' receipts.	265,604	219,227	Inc. 46,377	18.9

Wheat:	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.	1,341,671	1,996,308	Dec. 654,637	32.7
" shipments.	246,288	132,611	Inc. 113,677	85.8
Atlantic ports' receipts.	661,610	549,010	Inc. 112,600	20.5

Grain of all kinds:	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.	2,166,269	2,921,325	Dec. 755,056	25.8
" shipments.	1,147,094	451,462	Inc. 695,632	15.4
Atlantic ports' receipts.	1,762,818	1,459,521	Inc. 303,297	20.7

The rapid decrease in the grain movement is shown by the shipments from lake ports for the four weeks, as follows:

For week ending:	Nov. 20.	Nov. 27.	Dec. 4.	Dec. 11.
Shipments, bush.	3,228,172	2,379,015	1,897,019	1,147,092

The grain traffic of Oswego for the season has been:

Shipments, bush.....	3,238,172	2,379,015	1,897,619	1,147,09
The grain traffic of Oswego for the season has been :				
	1875.	1874.	Decrease.	P.
Receipts (by lake).....	8,293,799	12,706,883	4,413,084	34.
Shipments (by canal).....	4,731,244	7,785,962	3,054,718	39.

The receipts in 1875 were 8,221,952 bushels; the shipments, 4,317,586. The chief difference between receipts and shipments must be in rail shipments, not given, and in the grain manufactured at Oswego, which is a large amount.

Chicago receipts and shipments of grain for the week ending December 18 were:

Chicago receipts and shipments of grain for the week ending December 18 were:				
	1875.	1874.	Inc. or Dec.	P. c.
Receipts.	796,557	991,366	Dec. 194,809	19.7
Shipments.	249,954	195,027	Inc. 54,927	28.1

Freight Rates.

At a meeting of the General Freight Agents of the trunk lines in Chicago, Dec. 18, an advance of five cents per 100 pounds on fourth class to New York was agreed on, and the following rates fixed, to take effect Dec. 20:

Chicago to	Fourth class.	Boxed meats.	Bulk meats.
New York.	50 cents	50 cents	55 cents
Boston.	55 "	55 "	60 "
Portland.	55 "	55 "	60 "
Baltimore.	48 1/2 "	48 1/2 "	48 1/2 "
Philadelphia.	45 "	45 "	50 "
Albany.	45 "	45 "	50 "
Montreal.	45 "	45 "	50 "

Ocean rates this week have been reported as follows: Grain by sail from New York to Liverpool 8d. per bushel; by steam, 10d. to 10 1/2 d.; cotton by steam, 7-16d. per pound; provisions per ton, 50s.; apples per barrel, 5s. From New Orleans to Liverpool, cotton 5/4d. per pound by sail and 11-16d. by steam.

Petroleum from New York to Havre, 5s. 3d. per barrel.

The New York Tribune of Dec. 22 says: "The replies from the managers of the Central Vermont and Grand Trunk railroads to the demand of the three trunk lines leading from this city, that rates from Boston to Chicago and the West be advanced to the same prices as those charged from New York, were not satisfactory to the representatives of the trunk lines, the Central Vermont Company still refusing to enter into an agreement that did not provide for a reduction in rates by way of the Canada route. A meeting was therefore held at the office of the Erie Railway Company yesterday afternoon, at

which the New York Central was represented by J. H. Butler and R. L. Crawford, the Pennsylvania by J. L. Gosler, and the Erie by G. B. Blanchard and A. H. Ward, for the purpose of agreeing upon a new schedule of rates from this city to the West. The following rates were adopted:

	First class.	Second class.	Third class.	Fourth class.	Special.
Chicago.	30c.	25c.	20c.	20c.	15c.
Louisville.	39c.	34c.	26c.	28c.	23c.
St. Louis.	42c.	36c.	24c.	21c.	25c.

"The rates to Indianapolis, Cincinnati, Milwaukee, Detroit, Toledo and Cleveland are the same as those to Chicago. The new schedule will take effect this morning. It was stated yesterday that these rates are considerably lower than those now charged from Boston, and lower than they have ever before been from this city, not excepting the time of the freight-rates war last summer. The Baltimore & Ohio road has taken no active part in the movement for an equality in rates from Boston and New York, as it is not a member of the combination, but it is expected that it will, as heretofore, follow the action of the Pennsylvania Company, charging the same rates as the other lines. It is understood that no contracts embracing a considerable length of time will be made at the new figures."

THE SCRAP HEAP.

Railroad Manufactures.

The East St. Louis Car Works have an order for 200 freight cars, on which work is now in progress. The manufacture of car wheels was recently begun at these works.

The trustees in bankruptcy of J. T. & C. A. Wood, of Pittsburgh, will sell at auction on the premises, Jan. 13, the Wheatland Rail Mill property, in Wheatland, Mercer County, Pa., on the line of the Erie & Pittsburgh Railroad. The property consists of 325 acres of land; about three-quarters of a mile of railroad track and sidings; four blast furnaces, capable of producing 600 tons of pig iron weekly; a rail mill, nearly new, with a capacity of 1,000 tons of rails weekly; 220 buildings, consisting of offices, store, shops, engine house, tenement houses, etc., and a two-thirds interest in the Shenango Coal Company. The terms of sale are one-half cash, of which \$10,000 must be paid the day of sale, the balance on bond and mortgage for one, two and three years.

The Rogers Locomotive works at Paterson, N. J., recently shipped a locomotive to Cuba, and one to the Connecticut Western road.

The contract for the long span of the bridge over the Mississippi at St. Paul, Minn., has been let to Soulerin & Co., of Milwaukee, for \$20,160.

Work in the puddling and rail mills of the Baltimore & Ohio Company at Cumberland, Md., has been suspended, and the bar mill was to shut down Dec. 24. The time for the resumption of work has not been set.

The Detroit Bridge & Iron Works recently put up four bridges for the Chicago, Burlington & Quincy, on the main line in Iowa, between Ottumwa and Tyrone.

The Troy mill of the Albany & Rensselaer Iron & Steel Works resumed work Dec. 20, after having been closed since August. The wages have been fixed at \$3.25 per ton for puddlers. It is thought that all the company's mills will soon be at work.

Periodical Inspection of Boilers.

Railroad Commissioner Staples, of Rhode Island, has addressed a communication to the superintendents of all the railroads in the State, suggesting, in view of the facts developed by the recent explosion of a locomotive boiler in Providence, that twice each year, at stated periods, all the locomotive boilers in use be subjected to a hydrostatic test, which can easily be applied, and will be reasonably certain to show any dangerous weakness which may exist.

A "Dead Beat."

A Bridgeport (Conn.) telegram says that a young man, representing himself as the son of Wm. D. Bishop, President of the New York, New Haven & Hartford Railroad Company, has been traveling around the country for the past two or three months, and by means of forged letters, receipts and drafts, has swindled several railroad men and others in Chicago, St. Louis, and other places. On Saturday he made his appearance in Washington, where he attempted to obtain money of Senator Eaton, of Connecticut.

Correction in Train Accident Report.

In the "Train Accidents for November," in the Railroad Gazette for Dec. 13, mention was made of the derailment of a train of coal cars on the New York & New England Railroad, near Readville, Mass., Nov. 3. The notice in question was copied from a Boston paper, but Superintendent Britton informs us that no such accident took place, nor has any car been off the track on that road since he took charge of it in August last.

OLD AND NEW ROADS.

Cincinnati, Wabash & Western.

Five miles of iron have been laid during the last month, and the Southern terminus is now at Summitville, Ind., 36 miles southward from Goshen. The grading is nearly completed for seven miles further, to Alexandria, at the crossing of the Lafayette, Muncie & Bloomington, and the track will be laid to that point in a few weeks. There will then remain 11 miles of line to complete (two miles now graded) this road to Anderson and an intersection with the Cleveland, Columbus, Cincinnati & Indianapolis.

Peach Bottom.

The track of the Eastern Division has been extended from Goshen, Pa., westward two miles to Eldora, where the people of the neighborhood have already built a large depot. Trains will run to Eldora regularly this week.

Wyandotte, Kansas City & Northwestern.

A section of seven miles has been completed from Independence, Mo., eastward, making 17 miles in operation. The line is graded for 13 miles further, to Napoleon, and tracklaying is in progress. The County Commissioners of Jackson County have inspected and accepted the new section and ordered the issue of \$35,000 Blue township bonds to the company. Four towns in Saline County have voted \$140,000 aid to the road.

Grinnell & Montezuma.

The track on this road is now laid from Grinnell, Ia., the crossing of the Chicago, Rock Island & Pacific and the Central of Iowa, southwest 15 miles to Montezuma. Trains will shortly be running over the road.

Brotherhood of Locomotive Firemen

The second annual convention was held in Indianapolis, last week, beginning Dec. 14 and continuing several days. At the opening session, Mayor Craven made an address, welcoming the delegates, which was responded to by Grand Master Joshua Leach, who made a long address setting forth the objects and advantages of the Association. Other addresses were made and business committees appointed. In the evening the visiting delegations were entertained at a ball by the local lodge.

A large part of the business of the convention was transacted with closed doors. The constitution and ritual of the Brotherhood received some amendments. It was decided

to make the Secretary a salaried officer and to pay him \$1,000 a year. The organization of the Insurance Department was amended so that hereafter each lodge will have an insurance agent, instead of doing this branch of the business through its financial secretary. Each lodge made a donation to Secretary Sayre for his labors during the past year.

Officers for the ensuing year were elected, and it was resolved to hold the next convention at St. Louis on the second Tuesday in September, 1876.

Southern Minnesota.

It is said that arrangements have been made to sell finally this road under the decree of foreclosure as soon as the legal notice can be given. The object is to clear the road of all its embarrassments and reorganize the company, so that work on the extension of the road can be begun in the Spring, before the land-grant expires.

Dividends.

Dividends have been declared by the following companies: United New Jersey, 2½ per cent., quarterly, payable Jan. 10. Philadelphia & Trenton, 2½ per cent., quarterly, payable Jan. 10.

Illinois Central, 4 per cent., semi-annual, payable Feb. 1. Connecticut River, 4 per cent., semi-annual, payable Jan. 14. Iowa Falls & Sioux City (leased to Illinois Central), 2½ per cent., payable Jan. 1.

Queen Anne's & Kent, 1½ per cent., for the year ending Oct. 31.

Philadelphia, Wilmington & Baltimore, 4 per cent., semi-annual, payable Jan. 3.

Worcester & Nashua, 3½ per cent., semi-annual, payable Jan. 1.

Providence & Worcester, 4 per cent., semi-annual, payable Jan. 1.

The Worcester & Nashua falls from 3½ to 4; the Providence & Worcester from 5 to 4.

Chicago & Illinois River.

Mr. Bradford Hancock, Receiver of the Chicago Railway Construction Company, has petitioned the United States District Court to enjoin all further proceedings to enforce the claims of P. W. and C. I. Peck and of Friable & Rappelye, both of those parties having suits pending against the company in other courts and the latter having obtained a judgment for some \$15,000, which they seek to enforce by a sale of part of the road. The petition sets forth that it would be prejudicial to the claims of the Construction Company and other creditors to have these suits go on while the proceedings in bankruptcy are pending.

New Mail Routes.

Mail service has been ordered over the following new railroad lines:

New York & Canada, from Port Henry, N. Y., to Plattsburg, 50 miles.

Grinnell & Montezuma, from Grinnell, Ia., to Montezuma, 15 miles.

Chicago, Rock Island & Pacific, Edgerton Junction, Mo., to Atchison, Kan., 30 miles.

Atlantic & Great Western.

English papers publish the following statement of bonds, certificates, and shares in circulation, with deposits and assets of proprietors, in support of the revised official scheme of arrangement, dated July 21, 1875:

Description.	Total Issue.	Assets to Dec. 3.
First-mortgage bonds.....	\$15,168,200	\$7,999,808
Second-mortgage bonds.....	11,991,000	7,840,171
Third-mortgage bonds.....	28,784,000	12,583,041
Leased Lines bonds 1872.....	5,355,000	1,957,000
Leased Lines bonds 1873.....	3,568,000	1,526,000
Western Extension 8 per cent. certificates.....	1,030,000	488,000
Western Extension 7 per cent. bonds.....	1,748,500	404,500
Reorganization stock.....	412,500	228,000
Preferred stock.....	10,000,000	4,038,706
Common stock (estimated).....	20,000,000	12,889,401
	\$99,087,200	\$49,908,626

By this it appears that more than half of the whole amount of securities has been agreed to the scheme, but not half of four leading issues. Mr. J. B. Hodgskin, formerly Treasurer of the company, has been in England opposing this scheme and proposing some other, but though the English papers have a great deal to say about him, we have not been able to learn from them what plan he presents.

Newton & Monroe.

The Davenport (Ia.) Gazette says that the rails and the iron for the bridges for this road have been purchased. It is to be 13 miles long, and to run from Newton, Ia., on the Chicago, Rock Island & Pacific, southward to Monroe on the Keokuk & Des Moines road.

St. Paul & Sioux City.

The parties interested are trying to persuade this company to build a branch from Mankato, Minn., west by north to New Ulm, a distance of about 25 miles. The line would be nearly parallel to and not far from the Winona & St. Peter.

Bath & Hammondsport.

There is talk of extending this road from Bath, N. Y., westward about twenty miles to Hornellsville on the main line of the Erie. It would pass through a fertile and prosperous country.

Atlantic & Pacific.

Mr. Marmaduke, one of the Railroad Commissioners of Missouri, has written a letter saying that, while this road is in good condition and well-managed, yet a policy has been pursued which has caused much irritation among the people along the line, and has put them in opposition to the road. He suggests that the receivers adopt a policy calculated to conciliate the people and make them friendly to the road and willing to assist in building up its traffic.

California Pacific.

It is reported that an arrangement has been made for the benefit of the bondholders by which the earnings of the road will be largely increased. Under this agreement, it is said, a considerable portion of the overland travel to and from San Francisco will be sent by way of Vallejo and over this road, and that the business of the Central Pacific's Oregon Division will also be sent by way of Vallejo.

Eastern.

A largely attended meeting of creditors was held in Boston, Dec. 18, to see what could be done to assist the company in its present difficulties. A proposition was made to execute a mortgage on the property for \$14,000,000, under which two issues of bonds should be made, one of \$9,000,000, to bear interest regularly, the other of \$5,000,000, to receive interest only when the net earnings should be sufficient to pay it. All surplus property, not needed for the working of the road, to be transferred to the trustees under the mortgage, with power to sell it and redeem these \$5,000,000 income bonds. Holders of all the present obligations of the company to receive \$65 of the \$9,000,000 issue, and \$35 of the \$5,000,000 issue for each \$100 of the present debt. Holders of these bonds to have a vote in the management for each \$100. This was discussed at great length, but was not adopted. A proposition to have a receiver appointed, to protect the company from attachments and vexatious suits, was made by Mr. W. G. Russell and generally approved. Finally a committee, consisting of Lemuel Shaw, Charles J. Morrill and Dwight

RAILROAD EARNINGS IN NOVEMBER.

Name of Road.	Mileage.					Earnings.					Earnings per Mile.	
	1875.	1874.	Inc.	Dec.	Per c.	1875.	1874.	Increase.	Decrease.	Per c.	1875.	1874.
Atlantic & Pacific and leased lines.....	754	754	.....	.....	.....	\$426,841	\$410,936	\$15,905	.....	6.3	\$570	\$545
Burlington, Cedar Rapids & Minnesota.....	424	424	.....	.....	.....	127,879	101,187	26,692	.....	26.4	302	250
Canada Southern.....	452	452	.....	.....	.....	134,291	93,209	41,082	.....	44.1	297	206
Central Pacific.....	1,315	1,260	55	.....	4.4	1,508,000	1,381,765	126,235	.....	9.1	1,147	1,097
Chicago, Milwaukee & St. Paul.....	1,399	1,399	.....	.....	.....	927,000	694,250	232,750	.....	33.5	663	496
Chicago & Northwestern.....	1,500	1,499	1	.....	0.1	1,210,225	1,065,726	144,499	.....	13.4	813	711
Cincinnati, Lafayette & Chicago.....	75	75	.....	.....	.....	34,737	38,495	.....	\$3,758	9.6	463	513
Delaware & Maryland.....	129	129	.....	.....	.....	30,411	28,523	1,888	.....	5.5	233	240
Illinois Central.....	1,109	1,109	.....	.....	.....	787,854	668,943	118,911	.....	17.8	710	603
Indianapolis, Bloomington & Western.....	344	344	.....	.....	.....	189,392	176,549	12,843	.....	8.0	373	346
International & Great Northern.....	458	458	.....	.....	.....	189,392	176,549	12,843	.....	7.6	415	385
Kansas Pacific.....	761	761	.....	.....	.....	295,703	275,847	19,856	.....	7.2	390	362
Keokuk & Des Moines.....	161	161	.....	.....	.....	55,363	66,567	.....	11,204	16.8	344	413
Missouri, Kansas & Texas.....	786	786	.....	.....	.....	299,012	279,942	19,070	.....	6.8	368	356
Ohio & Mississippi.....	615	393	222	.....	36.5	327,256	300,877	26,379	.....	8.8	532	706
St. Louis, Alton & Terre Haute.....	298	298	.....	.....	.....	55,838	74,783	.....	18,945	25.3	194	260
St. Louis, Iron Mountain & Southern.....	71	71	.....	.....	.....	50,494	46,990	3,504	.....	7.6	711	661
St. Louis, Kansas City & Northern.....	685	685	.....	.....	.....	434,012	337,449	96,563	.....	28.6	634	493
St. Louis, Kansas City & Northern.....	504	504	.....	.....	.....	230,626	251,176	.....	20,550	8.2	458	498
St. Louis & Southeastern.....	349	349	.....	.....	.....	99,606	102,608	.....	3,002	2.9	285	294
Union Pacific.....	1,032	1,032	.....	.....	.....	989,353	1,000,598	.....	17,245	1.7	953	970
Totals.....	13,202	12,994	208	.....	2.3	\$8,355,820	\$7,515,506	\$840,314	\$840,329	11.2	\$633	\$582
Total increase.....	.....	.....	208	.....	2.3	.....	.....	840,329	.....	11.2	.....	.....

RAILROAD EARNINGS, ELEVEN MONTHS ENDING NOVEMBER 30.

Name of Road.	Mileage.					Earnings.					Earnings per mile.				
	1875.	1874.	In.	Dec.	Per c.	1875.	1874.	Increase.	Decrease.	P.c.	1875.	1874.	In.	Dec.	P.c.
Atlantic & Pac. and leased lines.....	754	754	.....	.....	.....	\$3,939,212	\$4,610,230	.....	\$671,018	14.5	\$5,224	\$6,114	.....	.....	14.5
Central Pacific.....	1,305	1,260	45	.....	3.6	15,594,183	13,152,479	2,441,704	.....	18.6	11,950	10,439	1,511	.....	14.5
Cincinnati, Lafayette & Chicago.....	75	75	.....	.....	.....	382,809	411,226	.....	48,417	11.8	4,837	5,489	.....	.....	11.8
Illinois Central.....	1,109	1,109	.....	.....	.....	7,339,008	7,220,285	118,723	.....	0.3	6,528	6,511	17	.....	0.3
Indianapolis, Bloom. & West'n.....	344	344	.....	.....	.....	1,106,571	1,511,279	.....	344,708	22.8	3,391	4,393	.....	1,002	22.8
International & Great Northern.....	458	458	.....	.....	.....	1,167,067	1,147,143	20,924	.....	1.7	2,548	2,590	.....	132	4.9
Kansas Pacific.....	761	761	.....	.....	.....	8,007,062	8,039,193	.....	32,144	0.4	3,851	3,994	.....	43	1.1
Keokuk & Des Moines.....	161	161	.....	.....	.....	741,918	638,462	.....	103,456	16.2	4,608	3,966	642	.....	16.2
Missouri, Kansas & Texas.....	786	786	.....	.....	.....	2,637,229	2,892,512	.....	255,283	8.8	3,355	3,680	.....	325	8.8
Ohio & Mississippi.....	579	393	186	.....	47.3	2,806,357	3,000,946	.....	194,589	4.5	4,951	7,696	.....	2,665	33.2
St. Louis, Alton & Terre Haute.....	71	71	.....	.....	.....	508,653	506,534	2,119	.....	0.4	7,164	7,134	30	.....	0.4
St. Louis, Iron Mt. & Southern.....	685	684	1	.....	0.1	3,307,424	2,894,466	412,958	.....	14.3	4,838	4,232	606	.....	14.1
St. Louis, Kansas City & North.....	504	499	5	.....	1.0	2,367,025	2,337,060	29,965	.....	1.3	4,696	4,779	.....	83	1.7
St. Louis & Southeastern.....	349	349	.....	.....	.....	915,161	1,156,778	.....	242,617	21.0	2,617	3,312	.....	695	21.0
Union Pacific.....	1,032	1,032	.....	.....	.....	10,902,380	9,662,720	1,239,660	.....	12.8	10,564	9,363	1,201	.....	12.8
Totals.....	8,973	8,696	277	.....	3.2	\$56,730,000	\$44,268,515	\$12,461,485	\$1,728,776	4.7	\$6,321	\$5,290	\$931	.....	1.6
Total increase.....	.....	.....	277	.....	3.2	.....	.....	12,461,485	.....	4.7	.....	.....	.....	.....	1.6

Poster, was appointed to confer with the directors and see what can be done. It was stated at the meeting that a large majority of the creditors have agreed not to press their claims at present.

Quebec Railroad Grants.

The Legislature of the Province of Quebec has passed resolutions supporting the Government in its policy of making further grants to railroads and completing the North Shore and the Montreal, Ottawa & Western roads.

Indianapolis, Cincinnati & Lafayette.

The Indianapolis Journal says: "It is stated, on seemingly good authority, that the Paymaster of the Indianapolis, Cincinnati & Lafayette road will start on the mission of paying off the employees for one month this week, and the week following will pay for a second month. The company now owes its employees for September, October, November, and thirteen days of December, and several of the employees have become needlessly alarmed, and if reports are true, left the employ of the company."

St. Louis & Southeastern.

The Auditor, Mr. John P. Hains, reports earnings for November as follows: St. Louis Division, \$58,544.67; Kentucky Division, \$28,422.22; Tennessee Division, \$12,669.47; total, \$99,636.37; total, 1874, \$102,608.24; decrease, \$13,001.87, or 2.9 per cent.

Ohio & Toledo.

This company is now trying to raise money along the proposed line for the extension of its road from Minerva, O., northward by way of Kent and Chagrin Falls to the Painesville & Youngstown near Chardon.

Delaware, Lackawanna & Western.

A report comes from Scranton that this company has resolved to finally abandon the 6 feet gauge and that the change to 4 feet 8½ inches will soon be begun. The change is, it is said, to be made gradually, beginning with the line from Scranton to Washington and the removal of the third rail on the Morris & Essex Division. This, if true, indicates a radical change in the policy of the company, which has stoutly adhered to the 6 feet gauge and not long ago changed the Utica Division to that gauge.

Canadian Pacific.

A Toronto dispatch of Dec. 21 says: "A minute of the Council of the Dominion Government to the Government of British Columbia, proposing new terms of union, is published. It proposes that British Columbians should relieve the Government of its obligation to build the Canadian Pacific Railway, accepting in lieu thereof and as compensation for any delays that may take place in the construction of the Pacific Railway, a cash bonus of \$750,000, to be applied either toward a local railway or to other public works. Canada would also surrender any claims to lands which may have been reserved in Vancouver Island for railway purposes. If this proposal is accepted, the Government will be prepared to submit to Parliament, at its forthcoming session, measures necessary to give it effect."

This action has been generally expected in Canada for some time.

Walnut Valley.

The organization of this company was completed at a meeting held in Emporia, Kan., last week. The road is to run through the Walnut Valley from Emporia by way of Eldorado and Windfall to Arkansas City. Surveys are to be made at once.

Lafayette, Muncie & Bloomington.

The road is now nearly completed to Lafayette, and when it reaches that point the contract calls for the delivery of \$1,600,000 stock and \$1,600,000 bonds to the contractors, D. P. Eels, of Cleveland, O., and associates. On application of the Commissioners of Clinton County, Ind., however, the Circuit Court of Delaware County has issued a preliminary injunction restraining the delivery of such bonds and stock. The grounds for the application are the alleged facts that three of the directors, John W. Heath, James B. Falley and O. W. Pierce, are in-

terested with Eels in the contract, and that they have controlled and dictated the action of the company. It is charged also that the contract was extravagant, and that it is intended to displace the present stock and leave the whole property in the contractors' hands.

The directors of the Company, at Lafayette, Dec. 20, applied for the appointment of a receiver for the Western Division, from Lafayette to the Illinois line, which is now leased to the Toledo, Wabash & Western. The motion was set down for Dec. 31.

Aurora & Cincinnati.

This company, which recently filed articles of incorporation in Indiana, purposes building a railroad from Aurora, Ind., on the Ohio River, northward to the Ohio line at the crossing of the old Whitewater Valley Canal.

Delaware & Bound Brook.

The application for the injunction to stop the building of the bridge over the Delaware, at Yardleyville, was very thoroughly and indeed exhaustively argued before the Chancellor at New Jersey last week, Attorney-General Vannatta and Mr. Cortland Parker appearing for the State, and Mr. Abraham Browning and Ex-Chancellor Williamson for the company. The arguments occupied three full days. The Chancellor reserved his decision.

Toledo, Wabash & Western.

The committee appointed by the holders of the consolidated gold mortgage bonds has issued a circular which says: "When the affairs of this road were put into the hands of a Receiver last Spring, there was a floating debt due of upwards of \$2,200,000, the larger portion of which, being for labor and supplies the Court ordered to be paid out of the first net earnings."

The holders of the gold mortgage bonds, being the junior mortgage and the only one covering all the property, instituted proceedings for foreclosure, and on the 14th of this month a decree of foreclosure and sale was granted by the Court in Ohio, which will be confirmed, we think, within six days in Indiana and Illinois; then, after sixty days' advertising, the property will be sold subject to all prior liens."

The circular goes on to say that the proceedings have been pushed as fast as legal formalities would allow and will be brought to completion as soon as possible. A plan of reorganization will then be presented which is believed to be fair to all parties and which will provide for the application of all net earnings to the payment of current and past-due interest. It is intended to buy in the road, when sold, for account of the gold-mortgage bondholders, the foreclosure cutting off about \$10,000,000 of the capital account, and to form a new company, a large part of whose stock will be held by persons who are also largely interested in the prior securities. The committee have advised with a number of bondholders and believe that their course is generally approved.

Auction Sales of Railroad Securities.

In New York, Dec. 18, the following prices were had at auction: Houston & Great Northern first-mortgage bonds, 60; St. Louis, Lawrence and Denver first-mortgage bonds, 26; Columbus, Chicago & Indiana Central, second consolidated mortgage bonds, 15; Toledo, Wabash & Western preferred stock 4½; United New Jersey stock, 135½.

Toledo, Ann Arbor & Northern.

It is stated by authority that Mr. Crane, who bought this road at the recent sale, has made arrangements by which work will be at once resumed on the road, and that it will be completed as a narrow-gauge line.

Western North Carolina.

The State Commissioners who have possession of this road have made a contract with Major James H. Wilson to complete the Blue Ridge Tunnel between Old Fort and Asheville.

Chesapeake & Ohio.

At the adjourn



Published Every Saturday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. H. FORNEY.

CONTENTS.

ILLUSTRATIONS:	Page.	EDITORIAL NOTES:	Page.
Rail Section and Joint Used	527	GENERAL RAILROAD NEWS:	529
On the Louisville & Nashville Road.	527	Elections and Appointments.	529
Richards' Piston Packing.	529	Personal.	530
CONTRIBUTIONS:		Traffic and Earnings.	530
A Model Municipal Bridge	527	The Scrap Heap.	530
Letting.	527	Old and New Roads.	530, 536
Why Did it Break?	528	Annual Reports.	536
EDITORIALS:		MISCELLANEOUS:	
The Year.	532	Lake Traffic and Rates in 1875.	528
Erie Reorganization.	533	Criticism on the Worcester Union Depot.	528
The Use of Steel.	534	A Disappointment.	528
The Lake Shore Wheel Report.	535	The Chicago Cheap Transportation Convention.	529
The German Railroads in 1875.	535	Incombustibility and Impermeability of Wood.	529
Record of New Railroad Construction.	536		

Editorial Announcements.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

THE YEAR.

The year 1875 opened with the railroads generally suffering from the general depression in business since the panic of September, 1873, which had limited the traffic of many, brought about reductions of rates quite generally, and changed the general current of affairs in the country. For many years previously—since the early years of the war, indeed—the growth of the country in population and production had been so rapid that the chief difficulty of the railroad companies had been to increase their facilities fast enough to meet the demands on them for transportation. Thus the experience of a long series of years seemed to show that a normal characteristic of railroad business was rapid extension. We shall do well to bear this in mind, for it largely determined the methods of managing railroads and ideas of railroad business which the people of the country as well as railroad men had formed. It was rarely sufficient to provide means for carrying a traffic as great as the largest the railroad ever had had: an addition was to be provided for yearly, and it seemed that every calculation of future traffic must be by arithmetical progression.

This was at the bottom of the great railroad extension. It was thought that traffic would grow faster than the railroad system; and though that would not of itself justify a corresponding increase of railroads, yet it seemed to be a reason why the new roads would get sufficient support. Railroad construction became one of the leading industries of the country, and 7,300 miles of new road were constructed in a single year, probably absorbing something like \$250,000,000 of capital. Manufacturers of railroad material and rolling stock were pressed to the utmost, and their business was enlarged immensely. The terrible shrinkage in this business is shown by the figures: 7,340 miles completed in 1873; 3,925 in 1873; 2,025 in 1874; probably not 1,400 miles in 1875.

Now, when the panic came, it found our railroads and railroad men and railroad manufacturers prepared for a condition of things which suddenly ceased to exist. Nearly every important railroad had been expending large sums to increase its capacity. New equipment, second tracks and additional sidings had been provided at the expense of new capital, to meet the pressure of traffic which, according to the experience of previous years, was sure to come speedily, but which, in most cases, has not come yet.

Doubtless 1874 was more trying to carriers than the one

now closing, not so much because there was less to carry, for there was not; nor because labor and supplies were higher, for there has not been much change in these; nor because rates were lower, for they were probably on the average higher; but chiefly because in 1874 the railroads and the railroad administrations were less well adapted to their changed circumstances. They were developed to meet the conditions of rapid growth in traffic, and had had little time to adapt themselves to the new and strange conditions of arrest of growth.

By the beginning of 1875, however, the condition of affairs was evident, and most railroad men recognized the fact that the way to make money was to save in expenses rather than to labor for additions to traffic—additions that could not be got, because production was not increasing. The railroads, therefore, have probably adapted themselves to their circumstances better this year than last.

This assumes that this year, as well as last, has been a very trying one, which nobody can deny. In some respects it has been more trying than its predecessor, a falling off of traffic combining with the unduly low rates of a war of competition to reduce the earnings of railroads.

There are no means of ascertaining exactly what the traffic of the country is during any one year; but the movement of leading staples gives some clue to it. At present, it appears that the receipts of grain at lake ports were 10½ per cent. less in 1875 than in 1874, and the receipts at Atlantic ports 2½ per cent. less. The exports of petroleum are about the same this year as last; the anthracite coal movement very nearly the same; the Lake Superior iron ore movement but a little less; the cotton movement 5 per cent. greater. These are not sufficient to determine the amount of traffic. The prices received for staple productions have a great deal to do with that. When farmers get a dollar and a half a bushel for their wheat and half as much for their corn, they buy a great deal of merchandise and travel a great deal. If they get but half those prices, they limit their expenditures as much as possible; and the case is similar with cotton-growers and other producers. There have been some important differences in prices in the two years under consideration; but usually a staple has varied so much within each year that it is not easy to make a comparison.

As to earnings, it is too early to speak with certainty. The number of railroads reporting has been unusually small, and from some important districts of country few or no reports are published. In this paper we publish our usual monthly tables. That for the eleven months ending with November gives returns from fifteen railroads, with 8,973 miles of road—about an eighth of the mileage in operation in the United States. These roads earned an average of \$6,321 per mile this year, against \$6,230 last, showing an increase of 1½ per cent. The fact that companies are often unwilling to report when their earnings are discouraging tends to make the reported earnings more favorable than the average; but this year this tendency has been to some extent counterbalanced by the reports of earnings of bankrupt roads made to courts by receivers. However, this is the first report that we have had for several years showing an average increase in earnings per mile for the first eleven months of the year. From 1872 to 1873 nineteen railroads showed an average decrease in earnings per mile of 1½ per cent.; from 1873 to 1874 these earnings fell off 5½ per cent. on seventeen roads. That they should increase from 1874 to 1875 indicates an arrest of the downward tendency, or would if the reports for the whole period were from the same roads. In fact, in a great many systems of railroads the average earnings per mile long suffered an annual decrease by reason of the annual increase of mileage, the new road naturally earning less than the old and so bringing down the average of the whole. This process of addition to mileage having ceased, the decrease in earnings per mile might also well come to an end.

The decrease in earnings in 1874 apparently was fully equalled by the reduction in expenses. In our number for June 5 of this year (page 233) we published a table showing the gross receipts and working expenses of 58 railroads for the years 1873 and 1874. These railroads had about a fourth of the mileage of the country, and the figures show that while their average earnings per mile decreased \$684, or 6½ per cent., from 1873 to 1874, their average expenses per mile decreased \$951, or 13.23 per cent., so that there was an average increase of net earnings of 7½ per cent. We explained at the time that the companies did not in many cases get the benefit of their larger net earnings, for the reason that most of them had recently increased their capital so largely that the increase in interest more than absorbed the addition to profits. Now the economy of 1874 was chiefly of the simple and easy kind that comes of great reductions in the prices of materials and labor. It was made, too, in spite of the habits and conditions developed by years of rapidly-growing traffic. In 1875, our railroads have had the advantage of the training in economy received during the previous year. No very great changes in prices having occurred, it was evident that the way to economize would be to work with greater skill and

carefulness. The railroad manager who a few years ago showed his ability chiefly by doing a large business with inadequate appliances knew at the beginning of this year that the question for solution was to work cheaply—to save in supplies, in repairs, in labor. Probably never before in the history of American railroads were so many able men devoting their best energies to the problem of conducting business with the greatest economy. They seek for a method of saving expenses as formerly they sought for new traffic, and it is probable that they have accomplished much and are learning to accomplish more.

On the other hand, one peculiar method of economizing has been less available this year than last. This is the process of "starving the road." When after the panic a railroad found itself in admirable order and with more equipment than its decreased traffic required, it was easy to make large reductions in maintenance accounts. When a car needed extensive repairs it could be laid up and one previously idle used in its place. So it is possible to reduce largely the condition and value of road and equipment, when traffic has decreased, without making them unequal to the requirements of traffic. But this process cannot go on very long. After a time maintenance will have to be in proportion to wear. It is quite probable that roads started in 1874 have had larger working expenses proportionally in 1875.

But wherever there has been an increase in savings, it will generally be felt more than last year, when so many roads had larger debts to pay interest on; for there have been few additions to capital accounts.

The work of constructing new railroads this year, as we have seen, has been slight compared with that in several preceding years. Our record at this date shows 1,264 miles completed in the United States in 1875; at this time last year we had news of 1,808 miles. It is ten years since we constructed so little in a year, and the average for the twenty years ending with 1865 was more than 1,500 miles a year. But after all, the amount is not small. It is an increase of nearly 2 per cent. in the mileage of the country, which is probably about as great as the increase in population. But there has probably been a greater falling off in the new construction undertaken by old companies, such as second, third and fourth tracks, sidings, stations, etc. Not for many years has it been possible to have work done so cheaply; but most companies found their existing appliances easily equal to the traffic offering, while it was so hard to earn interest on the old capital that they dared not increase it.

This and the general severe practice of economy has made the year a very hard one to many manufacturers of railroad materials and rolling stock. To some it has seemed that the railroads had ceased to be consumers; though the beginning of a more active demand recently is encouraging them.

The one recognized prominent event in railroad management during the year has been the competitive struggle between the Baltimore & Ohio and the Pennsylvania railroad companies, which soon involved the other trunk railroads, and caused ruinously low rates to prevail from the middle of February till September. Most of the time the prevailing passenger rates were \$18 from New York to Chicago and \$15 from Chicago to New York; and freight was taken in both directions at almost all rates except profitable ones. A very large part of the traffic north of the Ohio River was affected by this contest, by which nothing was settled, apparently, except the fact that any company can do its competitors a great deal of harm if it is willing to suffer with them. The opening of the Baltimore & Ohio's new line to Chicago was the occasion rather than the cause of the conflict. A similar contest for traffic between Detroit and Buffalo between the Grand Trunk and the Great Western, helped to spoil the business of those roads, and injured that of some of their neighbors. There have been some contests for St. Louis-Kansas City and St. Louis-Cincinnati business; but, generally, Western railroads have been glad to keep the peace.

Rates on freight from the Northwest to the seaboard, however, were forced down this season by the extraordinarily low lake and canal rates. From Chicago to Buffalo, nearly a thousand miles, the lake rate has varied from 2.4 to 6.3 cents per bushel during the whole season, and was on the average only 3.5 cents—the lowest ever known. Most of the season the lake and canal rate from Chicago to New York was not more than 10 cents per bushel.

When the condition of business in the country is such as to compel low rates, the losses by competitive contests and large expenditures for soliciting business are severely felt. Yet it is in just such times that such contests are most likely to break out, for it is then that the supply of transportation facilities most exceeds the demand, and the efforts to secure what traffic exists are most eager. But during the past few years the waste caused by such struggles has made an unusual impression on railroad proprietors and managers, and there has been a beginning of efforts to obviate them which may easily turn out to be the great event of the time in railroad management, and result in an essential modification of our railroad system. The "Saratoga agreement" made last year failed pretty completely. Recently some kind of an arrangement has been

made for trunk line traffic between the Northwest and the East, whose nature has not been fully explained, and whose success remains to be tested by time. Probably the most important of these experiments, however, is that applying to a much less important traffic, begun by an association of Southern railroads, and conducted by Mr. Albert Fink. This, too, has been in operation too short a time to make it possible to speak positively of its results. We mention it as an important experiment begun during the year which may lead to great results.

In railroad finance, the most important operations of the year have been the reorganizations of bankrupt railroads. There have been but few new failures, though the Erie Railway has been added to this list, and forms the most important company on it. The Eastern, of Massachusetts, which has not failed so far, has been shown to be earning less than its yearly interest charges. Very few companies previously in default have been able to resume payment and very few companies have resumed or increased dividends. Very few loans have been issued, though money has been easy to get on good security. Several bankrupt roads have been sold under foreclosure of mortgage; but most of the bankrupt roads are still worked by the companies under an arrangement with the creditors, or by receivers appointed by courts. There has not been much activity in the stock exchanges, though prices have fluctuated considerably.

In railroad legislation there has been little to chronicle. Missouri enacted an unreasonable and oppressive law and established a Railroad Commission. Minnesota repealed the most unreasonable features of its law, and changed its board of three commissioners for a single Commissioner, with authority to investigate, report and recommend. Wisconsin modified its law slightly, but left it monstrous. New constitutions in Missouri and Nebraska forbid grants of municipal aid to railroad projects. Cases have been heard in the United States Supreme Court which involve the validity of the Wisconsin and Illinois laws, and decisions are expected soon. There is evidently much less prejudice than formerly against the railroad companies, though this may be largely due to the excessively low rates which have prevailed recently, and the feeling may become prominent again if fairly-paying rates are established and maintained continuously.

Abroad, Germany and Austria have been occupied with the reorganization of their bankrupt railroads. The German roads were authorized at the beginning of the year to increase their freight tariffs on most articles 20 per cent. The German Parliament has a commission engaged in investigating the tariff question. France is exercised on the question of railroad extension in districts not now well accommodated, which its policy of avoiding competition between lines and its interest in the profits of the old companies make extremely difficult. Bavaria has purchased those railroads within its territory which were owned by companies, and is now the only considerable country owning and working all its railroads. In England, there has been no greater excitement than that attending the withdrawal of the second-class fares to old second-class rates, and the investigation of the Accident Commission which will report at the next session of Parliament, in February. The court established last year, the Railway Commission, has been active and efficient, and has been chiefly resorted to in contentions between different railroad companies. The letting of a contract for the first railroad in China may be the beginning of a great work in a new field.

Standing on the threshold of a new year, the temptation is strong to look over and see if we can what the future has in store. Of course it needs prophetic gifts to do this. We can, however, in some degree see what the existing tendency of things is. We know that the country has a large traffic to carry, and that the railroad companies are less disposed than usual to throw away their chances of getting fair prices for carrying it. Moreover, we have the encouraging fact that for some weeks traffic has been absolutely large on many lines and earnings increased. Our report of earnings for November, published to-day, has returns from 21 railroads, with 13,202 miles of road—about 18 per cent. of the total mileage in operation. These show an increase in total earnings of 11.2 per cent., and of 8 per cent. in earnings per mile. Considering the fact that such roads as reported show an increase of but 1½ per cent. in earnings per mile for the eleven months, this shows a most encouraging revival of business. We have next year the Centennial Exposition, which is sure to give a great impulse to passenger traffic, not, we fear, yet sufficiently appreciated or provided for. The railroads are generally able to do their work more economically than ever before, and it seems not too sanguine to expect a considerable revival in the business of the country, accompanied by a greater revival in railroad business, and the realization of profits which will enable the companies to make better returns to their proprietors and to become large buyers of materials, machinery and rolling stock, which many of them have gone without too long already, from simple inability to buy.

RAILROAD MEN AS LEGISLATORS.

It is doubtless true that in many parts of the country—perhaps most parts—there is a prevailing feeling that somehow it is improper that men interested in railroads should serve as legislators either State or national; and it would probably be counted an objection to the nomination of a man if he were a railroad director, or president, or otherwise interested in having the business of transportation profitable. It is assumed that these persons will represent chiefly their companies and not their constituencies.

Yet it is counted in favor of candidates that they are manufacturers, merchants, farmers or miners, or engaged in some other industry in which their income depends on the amount of profit secured in supplying the demands of the general community. These people, it is said, know what legislation their occupations need and what they have to fear, and so are better qualified to assist in securing wise legislation.

If railroad companies were accustomed to seek and obtain legislation by which they secure special favors and protection, this would be intelligible enough, and might be entirely justifiable; but it is, at least in these days, extremely rare that a railroad company whose road is constructed asks for assistance from either State or nation; and it is of the officers of such companies that the public is suspicious; those who are forming new companies, and want land grants and subsidies for them are not usually recognized as railroad men, and frequently have a good deal of popular support. On the other hand, some other industries do ask and obtain legislation for their aid and protection, designed for that purpose, which sometimes imposes considerable burdens on the community at large for a time, or permanently.

It is doubtless an advantage that a legislative body should be truly representative—that its members should have interests in common with the community at large, and be familiar with its industries; but though this representative character often enables them to propose such positive measures as the different classes need, yet its chief value doubtless is in enabling them quickly to see, point out, protest against and defeat the measures which, with good enough intentions probably, might result in serious damage to the different industries. That is, the value of the legislators to the classes which they represent is more in preventing damaging than in procuring favorable legislation. This is true because, as a rule, commerce and industries are the fruit of natural activities and not of legislation, which latter serves them chiefly by guaranteeing their unobstructed operation.

Now, in this function of the legislator as representative of a class or an industry, the railroad man may be one of the most useful of men, not only to his class but to the community, and that for some of the very reasons that make him an unpopular candidate and one infrequently presented or elected. These are that his class, though one of the most indispensable in the community, is in most States actually a small one, and in the others apparently small. Wherever there is much accumulated capital, there are many railroad proprietors. Most of these, however, are small proprietors and are not known or recognized as such, because they have other occupations, and, frequently, other and greater, and what is more, visible investments. The doctor in this Massachusetts town has twenty shares of Michigan Central or Boston & Albany stock; but, probably, not half-a-dozen men in town know it. The miller may have ten thousand dollars in railroad stocks and bonds; but everybody knows him as a miller and classes him and his interests accordingly. It is not supposed that a railroad man would represent these people, so far as their peculiar interests go. Indeed, the scarcity of railroad men in legislative bodies is due largely to the cause which also prevents the most efficient management of railroads—that is, the fact that the railroad property owned by one man is generally but a small proportion of his whole property. If railroads were owned by men who had no other means of support, not only would we find them opposing determinedly and effectively oppressive legislation, but inquiring sharply into the conduct of their agents, the officers and employees of their roads, and preventing a great many irregularities and wastes now common and hardly noticed.

Whenever questions come up involving the relations of the railroad companies to the public, or restrictions on their conduct, then it is right that the railroad legislator should be held to be representative of his class chiefly and to act as an advocate rather than as a disinterested legislator. But in these capacities he may be of very great service to the community, for he can expound the view of one of the parties chiefly concerned—probably the one party vitally concerned. Nor will his position then be in any way exceptional. Every year in every legislative body measures are presented having special reference to distinct classes of the community, and it is thought to be entirely appropriate that a member of the legislature belonging to the class affected should set forth the opinion of his class, and he is usually called upon to do so. Such an exposition of the class-interests is necessary to a sound conclusion as to the propriety of the proposed

class-legislation, and usually is admitted to be so. It is not often suspected or resented as impertinent, except where the class is a disreputable one or engaged in a disreputable business. A protest against legislation restricting gambling from a certain member of Congress might not be favorably received, but this would be because his profession is generally regarded as an indefensible one. A manufacturer of patent medicines once lifted up his voice in Congress to protest against what he deemed an oppressive tax on "proprietary medicines," which was costing him (but not the community) several thousand dollars a year. There were some sneers at his claims, but we believe he succeeded in getting the tax reduced.

Most of the present members of Congress who are in any way interested in railroad business are not best known as railroad men, but are capitalists or business men who have become connected with railroads by having invested in them. There are two or three exceptions, like Mr. Chester W. Chapin, President of the Boston & Albany Railroad Company, and Mr. John Reilly, late Superintendent of the Pennsylvania Railroad, the latter never having had any other occupation since his youth. This is natural and appropriate enough. We are supposed to send a man to Congress because he has displayed in his work, whatever it may be, qualities which indicate that he will make a good legislator. We do not choose him because of his occupation, but because of qualities displayed in his occupation which we desire in a representative. And in the business of working railroads, however much need there may be of these qualities, and however much they may be developed, they do not always become known beyond a quite narrow circle. It is not a business which peculiarly qualifies a man for public life, and as it is not recognized as an avenue to such honor it does not attract those ambitious of popular favor. But as large railroad proprietors may be of any profession or occupation, they are as likely as others to be fitted for and ambitious of legislative duties. We hold that their special interests in the business of transportation do not disqualify them, any more than would an interest in the profits of any other business; that indeed these interests enable to be useful to both their class and the community, in the same way as the member of any other class may be specially useful because he is representative of that class.

ERIE REORGANIZATION.

A brief summary of the scheme of arrangement for a foreclosure of the Erie Railway proposed by Sir Edward Watkin's committee has been sent to this country by cable. Its provisions are given as follows:

The old issues of bonds are left undisturbed, that is

The first mortgage (extended).....	\$3,489,000
The second mortgage (extended).....	2,174,000
The third mortgage.....	4,592,000
The fourth mortgage.....	1,937,000
The fifth mortgage.....	700,500
The Buffalo Branch mortgage.....	182,500
Total.....	\$13,388,100

on which the yearly interest with gold at 112 amounts to \$934,346 in currency.

These bonds are too well secured to be in danger, and the interest on them has always been paid when due.

The next issues are:

Convertible sterling 6 per cent. loan.....	\$4,500,000
First consolidated mortgage 7s.....	19,076,000
Total.....	\$23,576,000

There will soon be a year's interest over-due on these bonds, amounting to \$1,114,623 gold. This the committee proposes to fund in bonds of the same classes, thus making the total of these issues \$17,770,623. Thence for four years 6 per cent. interest in gold is to be paid on these bonds; but in 1880 and after, the interest shall be 7 per cent.; but the company shall have the right to redeem before that time at 105. The language of the telegram would imply that the interest on the sterling loan will not be temporarily reduced, but after 1880 will be permanently increased from 6 to 7 per cent., while the first consolidated will suffer a reduction from 7 to 6 per cent. for four years. Quite probably part of the language of the telegram which reads as if it referred to the present principal of these loans is intended to apply only to the bonds issued for the funded coupons of the current year. A reduction of 1 per cent. on the first consolidated bonds and their funded coupons would cause a reduction of \$144,735 in the annual interest charge for the four years.

Radical treatment is proposed for the later issues:

Convertible gold 7s.....	\$10,000,000
Second consolidated 7s.....	14,400,000
Total.....	\$24,400,000

on which the present yearly interest charge amounts in currency to \$1,890,380 when gold is 112.

For these it is proposed to substitute two classes of gold sterling bonds having ninety years to run. The first of these will bear 6 per cent. interest, to be paid in cash after March, 1877, the two years' interest due before that date being funded in bonds of the same kind. These bonds will be issued for sixty per cent. of the two classes of bonds in question—that is, for \$14,640,000. For the other 40 per cent., bonds will be issued the interest on which



Published Every Saturday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. H. FORNEY.

CONTENTS.

ILLUSTRATIONS:	Page.	EDITORIAL NOTES:	Page.
Rail Section and Joint Used	527	GENERAL RAILROAD NEWS:	529
On the Louisville & Nash-	527	Elections and Appointments	529
ville Road	527	Personal	530
Richards' Flacon Backing	529	Traffic and Earnings	530
CONTRIBUTIONS:		The Scrap Heap	530
A Model Municipal Bridge	527	Old and New Roads	530, 536
Letting	527	Annual Reports	536
Why Did it Break?	529	MISCELLANEOUS:	
EDITORIALS:		Lake Traffic and Rates in	
The Year	532	1875	528
Erie Reorganization	533	Criticism on the Worcester	
The Use of Steel	534	Union Depot	528
The Lake Shore Wheel Re-		A Disappointment	528
port	535	The Chicago Cheap Transpor-	
The German Railroads in		tation Convention	529
1875	535	Incombustibility and Imper-	
Record of New Railroad Con-		measibility of Wood	529
struction	536		

Editorial Announcements.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

THE YEAR.

The year 1875 opened with the railroads generally suffering from the general depression in business since the panic of September, 1873, which had limited the traffic of many, brought about reductions of rates quite generally, and changed the general current of affairs in the country. For many years previously—since the early years of the war, indeed—the growth of the country in population and production had been so rapid that the chief difficulty of the railroad companies had been to increase their facilities fast enough to meet the demands on them for transportation. Thus the experience of a long series of years seemed to show that a normal characteristic of railroad business was rapid extension. We shall do well to bear this in mind, for it largely determined the methods of managing railroads and ideas of railroad business which the people of the country as well as railroad men had formed. It was rarely sufficient to provide means for carrying a traffic as great as the largest the railroad ever had had: an addition was to be provided for yearly, and it seemed that every calculation of future traffic must be by arithmetical progression.

This was at the bottom of the great railroad extension. It was thought that traffic would grow faster than the railroad system; and though that would not of itself justify a corresponding increase of railroads, yet it seemed to be a reason why the new roads would get sufficient support. Railroad construction became one of the leading industries of the country, and 7,300 miles of new road were constructed in a single year, probably absorbing something like \$250,000,000 of capital. Manufacturers of railroad material and rolling stock were pressed to the utmost, and their business was enlarged immensely. The terrible shrinkage in this business is shown by the figures: 7,340 miles completed in 1873; 3,925 in 1874; 2,025 in 1875; probably not 1,400 miles in 1875.

Now, when the panic came, it found our railroads and railroad men and railroad manufacturers prepared for a condition of things which suddenly ceased to exist. Nearly every important railroad had been expending large sums to increase its capacity. New equipment, second tracks and additional sidings had been provided at the expense of new capital, to meet the pressure of traffic which, according to the experience of previous years, was sure to come speedily, but which, in most cases, has not come yet.

Doubtless 1874 was more trying to carriers than the one

now closing, not so much because there was less to carry, for there was not; nor because labor and supplies were higher, for there has not been much change in these; nor because rates were lower, for they were probably on the average higher; but chiefly because in 1874 the railroads and the railroad administrations were less well adapted to their changed circumstances. They were developed to meet the conditions of rapid growth in traffic, and had had little time to adapt themselves to the new and strange conditions of arrest of growth.

By the beginning of 1875, however, the condition of affairs was evident, and most railroad men recognized the fact that the way to make money was to save in expenses rather than to labor for additions to traffic—additions that could not be got, because production was not increasing. The railroads, therefore, have probably adapted themselves to their circumstances better this year than last.

This assumes that this year, as well as last, has been a very trying one, which nobody can deny. In some respects it has been more trying than its predecessor, a falling off of traffic combining with the unduly low rates of a war of competition to reduce the earnings of railroads.

There are no means of ascertaining exactly what the traffic of the country is during any one year; but the movement of leading staples gives some clue to it. At present, it appears that the receipts of grain at lake ports were 10½ per cent. less in 1875 than in 1874, and the receipts at Atlantic ports 2½ per cent. less. The exports of petroleum are about the same this year as last; the anthracite coal movement very nearly the same; the Lake Superior iron ore movement but a little less; the cotton movement 5 per cent. greater. These are not sufficient to determine the amount of traffic. The prices received for staple productions have a great deal to do with that. When farmers get a dollar and a half a bushel for their wheat and half as much for their corn, they buy a great deal of merchandise and travel a great deal. If they get but half those prices, they limit their expenditures as much as possible; and the case is similar with cotton-growers and other producers. There have been some important differences in prices in the two years under consideration; but usually a staple has varied so much within each year that it is not easy to make a comparison.

As to earnings, it is too early to speak with certainty. The number of railroads reporting has been unusually small, and from some important districts of country few or no reports are published. In this paper we publish our usual monthly tables. That for the eleven months ending with November gives returns from fifteen railroads, with 8,973 miles of road—about an eighth of the mileage in operation in the United States. These roads earned an average of \$6,321 per mile this year, against \$6,230 last, showing an increase of 1½ per cent. The fact that companies are often unwilling to report when their earnings are discouraging tends to make the reported earnings more favorable than the average; but this year this tendency has been to some extent counterbalanced by the reports of earnings of bankrupt roads made to courts by receivers. However, this is the first report that we have had for several years showing an average increase in earnings per mile for the first eleven months of the year. From 1872 to 1873 nineteen railroads showed an average decrease in earnings per mile of 1½ per cent.; from 1873 to 1874 these earnings fell off 5½ per cent. on seventeen roads. That they should increase from 1874 to 1875 indicates an arrest of the downward tendency, or would if the reports for the whole period were from the same roads. In fact, in a great many systems of railroads the average earnings per mile long suffered an annual decrease by reason of the annual increase of mileage, the new road naturally earning less than the old and so bringing down the average of the whole. This process of addition to mileage having ceased, the decrease in earnings per mile might also well come to an end.

The decrease in earnings in 1874 apparently was fully equalled by the reduction in expenses. In our number for June 5 of this year (page 233) we published a table showing the gross receipts and working expenses of 58 railroads for the years 1873 and 1874. These railroads had about a fourth of the mileage of the country, and the figures show that while their average earnings per mile decreased \$684, or 6½ per cent., from 1873 to 1874, their average expenses per mile decreased \$951, or 13.23 per cent., so that there was an average increase of net earnings of 7½ per cent. We explained at the time that the companies did not in many cases get the benefit of their larger net earnings, for the reason that most of them had recently increased their capital so largely that the increase in interest more than absorbed the addition to profits. Now the economy of 1874 was chiefly of the simple and easy kind that comes of great reductions in the prices of materials and labor. It was made, too, in spite of the habits and conditions developed by years of rapidly-growing traffic. In 1875, our railroads have had the advantage of the training in economy received during the previous year. No very great changes in prices having occurred, it was evident that the way to economize would be to work with greater skill and

carefulness. The railroad manager who a few years ago showed his ability chiefly by doing a large business with inadequate appliances knew at the beginning of this year that the question for solution was to work cheaply—to save in supplies, in repairs, in labor. Probably never before in the history of American railroads were so many able men devoting their best energies to the problem of conducting business with the greatest economy. They seek for a method of saving expenses as formerly they sought for new traffic, and it is probable that they have accomplished much and are learning to accomplish more.

On the other hand, one peculiar method of economizing has been less available this year than last. This is the process of "starving the road." When after the panic a railroad found itself in admirable order and with more equipment than its decreased traffic required, it was easy to make large reductions in maintenance accounts. When a car needed extensive repairs it could be laid up and one previously idle used in its place. So it is possible to reduce largely the condition and value of road and equipment, when traffic has decreased, without making them unequal to the requirements of traffic. But this process cannot go on very long. After a time maintenance will have to be in proportion to wear. It is quite probable that roads starved in 1874 have had larger working expenses proportionally in 1875.

But wherever there has been an increase in savings, it will generally be felt more than last year, when so many roads had larger debts to pay interest on; for there have been few additions to capital accounts.

The work of constructing new railroads this year, as we have seen, has been slight compared with that in several preceding years. Our record at this date shows 1,264 miles completed in the United States in 1875; at this time last year we had news of 1,808 miles. It is ten years since we constructed so little in a year, and the average for the twenty years ending with 1865 was more than 1,500 miles a year. But after all, the amount is not small. It is an increase of nearly 2 per cent. in the mileage of the country, which is probably about as great as the increase in population. But there has probably been a greater falling off in the new construction undertaken by old companies, such as second, third and fourth tracks, sidings, stations, etc. Not for many years has it been possible to have work done so cheaply; but most companies found their existing appliances easily equal to the traffic offering, while it was so hard to earn interest on the old capital that they dared not increase it.

This and the general severe practice of economy has made the year a very hard one to many manufacturers of railroad materials and rolling stock. To some it has seemed that the railroads had ceased to be consumers; though the beginning of a more active demand recently is encouraging them.

The one recognized prominent event in railroad management during the year has been the competitive struggle between the Baltimore & Ohio and the Pennsylvania railroad companies, which soon involved the other trunk railroads, and caused ruinously low rates to prevail from the middle of February till September. Most of the time the prevailing passenger rates were \$18 from New York to Chicago and \$15 from Chicago to New York; and freight was taken in both directions at almost all rates except profitable ones. A very large part of the traffic north of the Ohio River was affected by this contest, by which nothing was settled, apparently, except the fact that any company can do its competitors a great deal of harm if it is willing to suffer with them. The opening of the Baltimore & Ohio's new line to Chicago was the occasion rather than the cause of the conflict. A similar contest for traffic between Detroit and Buffalo between the Grand Trunk and the Great Western, helped to spoil the business of those roads, and injured that of some of their neighbors. There have been some contests for St. Louis-Kansas City and St. Louis-Cincinnati business; but, generally, Western railroads have been glad to keep the peace.

Rates on freight from the Northwest to the seaboard, however, were forced down this season by the extraordinarily low lake and canal rates. From Chicago to Buffalo, nearly a thousand miles, the lake rate has varied from 2.4 to 6.3 cents per bushel during the whole season, and was on the average only 3.5 cents—the lowest ever known. Most of the season the lake and canal rate from Chicago to New York was not more than 10 cents per bushel.

When the condition of business in the country is such as to compel low rates, the losses by competitive contests and large expenditures for soliciting business are severely felt. Yet it is in just such times that such contests are most likely to break out, for it is then that the supply of transportation facilities most exceeds the demand, and the efforts to secure what traffic exists are most eager. But during the past few years the waste caused by such struggles has made an unusual impression on railroad proprietors and managers, and there has been a beginning of efforts to obviate them which may easily turn out to be the great event of the time in railroad management, and result in an essential modification of our railroad system. The "Saratoga agreement" made last year failed pretty completely. Recently some kind of an arrangement has been

made for trunk line traffic between the Northwest and the East, whose nature has not been fully explained, and whose success remains to be tested by time. Probably the most important of these experiments, however, is that applying to a much less important traffic, begun by an association of Southern railroads, and conducted by Mr. Albert Fink. This, too, has been in operation too short a time to make it possible to speak positively of its results. We mention it as an important experiment begun during the year which may lead to great results.

In railroad finance, the most important operations of the year have been the reorganizations of bankrupt railroads. There have been but few new failures, though the Erie Railway has been added to this list, and forms the most important company on it. The Eastern, of Massachusetts, which has not failed so far, has been shown to be earning less than its yearly interest charges. Very few companies previously in default have been able to resume payment and very few companies have resumed or increased dividends. Very few loans have been issued, though money has been easy to get on good security. Several bankrupt roads have been sold under foreclosure of mortgage; but most of the bankrupt roads are still worked by the companies under an arrangement with the creditors, or by receivers appointed by courts. There has not been much activity in the stock exchanges, though prices have fluctuated considerably.

In railroad legislation there has been little to chronicle. Missouri enacted an unreasonable and oppressive law and established a Railroad Commission. Minnesota repealed the most unreasonable features of its law, and changed its board of three commissioners for a single Commissioner, with authority to investigate, report and recommend. Wisconsin modified its law slightly, but left it monstrous. New constitutions in Missouri and Nebraska forbid grants of municipal aid to railroad projects. Cases have been heard in the United States Supreme Court which involve the validity of the Wisconsin and Illinois laws, and decisions are expected soon. There is evidently much less prejudice than formerly against the railroad companies, though this may be largely due to the excessively low rates which have prevailed recently, and the feeling may become prominent again if fairly-paying rates are established and maintained continuously.

Abroad, Germany and Austria have been occupied with the reorganization of their bankrupt railroads. The German roads were authorized at the beginning of the year to increase their freight tariffs on most articles 20 per cent. The German Parliament has a commission engaged in investigating the tariff question. France is exercised on the question of railroad extension in districts not now well accommodated, which its policy of avoiding competition between lines and its interest in the profits of the old companies make extremely difficult. Bavaria has purchased those railroads within its territory which were owned by companies, and is now the only considerable country owning and working all its railroads. In England, there has been no greater excitement than that attending the withdrawal of the second-class from the Midland Railway, and the reduction of first-class fares to old second-class rates, and the investigation of the Accident Commission which will report at the next session of Parliament, in February. The court established last year, the Railway Commission, has been active and efficient, and has been chiefly resorted to in contentions between different railroad companies. The letting of a contract for the first railroad in China may be the beginning of a great work in a new field.

Standing on the threshold of a new year, the temptation is strong to look over and see if we can what the future has in store. Of course it needs prophetic gifts to do this. We can, however, in some degree see what the existing tendency of things is. We know that the country has a large traffic to carry, and that the railroad companies are less disposed than usual to throw away their chances of getting fair prices for carrying it. Moreover, we have the encouraging fact that for some weeks traffic has been absolutely large on many lines and earnings increased. Our report of earnings for November, published to-day, has returns from 21 railroads, with 13,202 miles of road—about 18 per cent. of the total mileage in operation. These show an increase in total earnings of 11.2 per cent., and of 8 per cent. in earnings per mile. Considering the fact that such roads as reported show an increase of but 1½ per cent. in earnings per mile for the eleven months, this shows a most encouraging revival of business. We have next year the Centennial Exposition, which is sure to give a great impulse to passenger traffic, not, we fear, yet sufficiently appreciated or provided for. The railroads are generally able to do their work more economically than ever before, and it seems not too sanguine to expect a considerable revival in the business of the country, accompanied by a greater revival in railroad business, and the realization of profits which will enable the companies to make better returns to their proprietors and to become large buyers of materials, machinery and rolling stock, which many of them have gone without too long already, from simple inability to buy.

RAILROAD MEN AS LEGISLATORS.

It is doubtless true that in many parts of the country—perhaps most parts—there is a prevailing feeling that somehow it is improper that men interested in railroads should serve as legislators either State or national; and it would probably be counted an objection to the nomination of a man if he were a railroad director, or president, or otherwise interested in having the business of transportation profitable. It is assumed that these persons will represent chiefly their companies and not their constituencies.

Yet it is counted in favor of candidates that they are manufacturers, merchants, farmers or miners, or engaged in some other industry in which their income depends on the amount of profit secured in supplying the demands of the general community. These people, it is said, know what legislation their occupations need and what they have to fear, and so are better qualified to assist in securing wise legislation.

If railroad companies were accustomed to seek and obtain legislation by which they secure special favors and protection, this would be intelligible enough, and might be entirely justifiable; but it is, at least in these days, extremely rare that a railroad company whose road is constructed asks for assistance from either State or nation; and it is of the officers of such companies that the public is suspicious; those who are forming new companies, and want land grants and subsidies for them are not usually recognized as railroad men, and frequently have a good deal of popular support. On the other hand, some other industries do ask and obtain legislation for their aid and protection, designed for that purpose, which sometimes imposes considerable burdens on the community at large for a time, or permanently.

It is doubtless an advantage that a legislative body should be truly representative—that its members should have interests in common with the community at large, and be familiar with its industries; but though this representative character often enables them to propose such positive measures as the different classes need, yet its chief value doubtless is in enabling them quickly to see, point out, protest against and defeat the measures which, with good enough intentions probably, might result in serious damage to the different industries. That is, the value of the legislators to the classes which they represent is more in preventing damaging than in procuring favorable legislation. This is true because, as a rule, commerce and industries are the fruit of natural activities and not of legislation, which latter serves them chiefly by guaranteeing their unobstructed operation.

Now, in this function of the legislator as representative of a class or an industry, the railroad man may be one of the most useful of men, not only to his class but to the community, and that for some of the very reasons that make him an unpopular candidate and one infrequently presented or elected.

These are that his class, though one of the most indispensable in the community, is in most States actually a small one, and in the others apparently small. Wherever there is much accumulated capital, there are many railroad proprietors. Most of these, however, are small proprietors and are not known or recognized as such, because they have other occupations, and, frequently, other and greater, and what is more, visible investments. The doctor in this Massachusetts town has twenty shares of Michigan Central or Boston & Albany stock; but, probably, not half-a-dozen men in town know it. The miller may have ten thousand dollars in railroad stocks and bonds; but everybody knows him as a miller and classes him and his interests accordingly. It is not supposed that a railroad man would represent these people, so far as their peculiar interests go. Indeed, the scarcity of railroad men in legislative bodies is due largely to the cause which also prevents the most efficient management of railroads—that is, the fact that the railroad property owned by one man is generally but a small proportion of his whole property. If railroads were owned by men who had no other means of support, not only would we find them opposing determinedly and effectively oppressive legislation, but inquiring sharply into the conduct of their agents, the officers and employees of their roads, and preventing a great many irregularities and wastes now common and hardly noticed.

Whenever questions come up involving the relations of the railroad companies to the public, or restrictions on their conduct, then it is right that the railroad legislator should be held to be representative of his class chiefly and to act as an advocate rather than as a disinterested legislator. But in these capacities he may be of very great service to the community, for he can expound the view of one of the parties chiefly concerned—probably the one party vitally concerned. Nor will his position then be in any way exceptional. Every year in every legislative body measures are presented having special reference to distinct classes of the community, and it is thought to be entirely appropriate that a member of the legislature belonging to the class affected should set forth the opinion of his class, and he is usually called upon to do so. Such an exposition of the class-interests is necessary to a sound conclusion on the propriety of the proposed

class-legislation, and usually is admitted to be so. It is not often suspected or resented as impertinent, except where the class is a disreputable one or engaged in a disreputable business. A protest against legislation restricting gambling from a certain member of Congress might not be favorably received, but this would be because his profession is generally regarded as an indefensible one. A manufacturer of patent medicines once lifted up his voice in Congress to protest against what he deemed an oppressive tax on "proprietary medicines," which was costing him (but not the community) several thousand dollars a year. There were some sneers at his claims, but we believe he succeeded in getting the tax reduced.

Most of the present members of Congress who are in any way interested in railroad business are not best known as railroad men, but are capitalists or business men who have become connected with railroads by having invested in them. There are two or three exceptions, like Mr. Chester W. Chapin, President of the Boston & Albany Railroad Company, and Mr. John Reilly, late Superintendent of the Pennsylvania Railroad, the latter never having had any other occupation since his youth. This is natural and appropriate enough. We are supposed to send a man to Congress because he has displayed in his work, whatever it may be, qualities which indicate that he will make a good legislator. We do not choose him because of his occupation, but because of qualities displayed in his occupation which we desire in a representative. And in the business of working railroads, however much need there may be of these qualities, and however much they may be developed, they do not always become known beyond a quite narrow circle. It is not a business which peculiarly qualifies a man for public life, and as it is not recognized as an avenue to such honor it does not attract those ambitious of popular favor. But as large railroad proprietors may be of any profession or occupation, they are as likely as others to be fitted for and ambitious of legislative duties. We hold that their special interests in the business of transportation do not disqualify them, any more than would an interest in the profits of any other business; that indeed these interests enable to be useful to both their class and the community, in the same way as the member of any other class may be specially useful because he is representative of that class.

ERIE REORGANIZATION.

A brief summary of the scheme of arrangement for a foreclosure of the Erie Railway proposed by Sir Edward Watkin's committee has been sent to this country by cable. Its provisions are given as follows:

The old issues of bonds are left undisturbed, that is

The first mortgage (extended).....	\$3,483,000
The second mortgage (extended).....	2,174,000
The third mortgage.....	4,892,000
The fourth mortgage.....	2,937,000
The fifth mortgage.....	709,500
The Buffalo Branch mortgage.....	192,000

Total.....\$13,388,100
on which the yearly interest with gold at 112 amounts to \$934,346 in currency.

These bonds are too well secured to be in danger, and the interest on them has always been paid when due.

The next issues are:

Convertible sterling 6 per cent. loan.....	\$4,890,000
First consolidated mortgage 7s.....	13,076,000

Total.....\$18,066,000
There will soon be a year's interest over-due on these bonds, amounting to \$1,114,623 gold. This the committee proposes to fund in bonds of the same classes, thus making the total of these issues \$17,770,623. Thence for four years 6 per cent. interest in gold is to be paid on these bonds; but in 1880 and after, the interest shall be 7 per cent.; but the company shall have the right to redeem before that time at 105. The language of the telegram would imply that the interest on the sterling loan will not be temporarily reduced, but after 1880 will be permanently increased from 6 to 7 per cent., while the first consolidated will suffer a reduction from 7 to 6 per cent. for four years. Quite probably part of the language of the telegram which reads as if it referred to the present principal of these loans is intended to apply only to the bonds issued for the funded coupons of the current year. A reduction of 1 per cent. on the first consolidated bonds and their funded coupons would cause a reduction of \$144,735 in the annual interest charge for the four years.

Radical treatment is proposed for the later issues:

Convertible gold 7s.....	\$10,000,000
Second consolidated 7s.....	14,400,000

Total.....\$24,400,000
on which the present yearly interest charge amounts in currency to \$1,890,380 when gold is 112.

For these it is proposed to substitute two classes of gold sterling bonds having ninety years to run. The first of these will bear 6 per cent. interest, to be paid in cash after March, 1877, the two years' interest due before that date being funded in bonds of the same kind. These bonds will be issued for sixty per cent. of the two classes of bonds in question—that is, for \$14,640,000. For the other 40 per cent., bonds will be issued the interest on which

will be payable only when there are sufficient net earnings. The rate will be 4 per cent. until 1881, and 5 per cent. thereafter. This reduces the rate of interest that must be paid on these bonds from 7 to 3.6 per cent., and the amount (in gold) due yearly from \$1,708,000 to \$878,400.

As to the stock, the preferred will have a claim for only 6 instead of 7 per cent. dividends, and will be assessed \$3 a share; the ordinary stock will be assessed \$6 a share; but for these assessments the holders will receive 5 per cent. third-mortgage income bonds.

Temporarily the bondholders are to have the voting power, until the foreclosure is carried out, and the company freed from the danger of bankruptcy. Gov. Tilden is to be asked to take the chairmanship of the committee entrusted with the work of foreclosure and reorganization, and the plan is to be submitted to a meeting of stock and bondholders in London, January 4.

By this plan the company will be at once provided with new capital by the assessment on stockholders, amounting to

\$3 per share on preferred stock..... \$258,107
\$6 per share on common stock..... 4,880,000

Total..... \$5,138,107

This will be the only direct contribution of new capital. A large indirect contribution will be supplied, however, by the reduction in the yearly interest charges. The bonded debt, after the reorganization, would be:

Bonds on which Interest is Obligatory.

	Principal.	Interest in Currency.
Old mortgages.....	\$13,338,100	\$594,345
Convertible sterling 6s (with funded coupons).....	4,854,800	326,242
First consolidated 7s (with funded coupons).....	12,922,834	1,013,150
New 6s (with funded coupons).....	15,518,400	1,042,500
Total.....	\$46,634,134	\$3,976,238
Present total.....	54,394,100	4,078,106
Decrease.....	\$7,659,966	\$756,868

Bonds on which Interest is Contingent on Amount of Net Earnings.

	Principal.	Currency Int.
Third mortgage 6s (to stock).....	\$4,936,107	\$276,422
New 4s and 5s (for 40 per cent. of bonds).....	9,760,000	\$446,580
Total.....	\$14,696,107	\$722,002

The common stock will remain as heretofore. The total bonded debt will be:

	Principal.	Currency Interest.
After reorganization.....	\$61,330,241	\$4,139,240
Now.....	54,394,100	4,078,106
Increase.....	\$6,936,141	\$66,134

There will thus be a somewhat greater amount due for interest before the stock can receive dividends than is the case now, so that the inducement for the latter to submit to assessments consists in the probability of greater net earnings consequent on the expenditure of new capital, and also (which is a very important feature in the reorganization) the relief of the company from its burdensome leases and contracts, through the foreclosure. The Erie will be a new company after that event, and contracts made by the present company will not be binding upon its successor, as all of the old company's property will then have been sold to satisfy judgments. There were net losses on eleven leased lines amounting to \$480,000 for the last year reported.

But in the above statement the amount of interest will be that accruing when the full amount is paid, and no account is taken of the various postponements of interest, which will be equivalent to a contribution of new capital and will amount in the aggregate to a large sum.

Thus, the interest for the current year due and unpaid, all of which is to be funded, will be \$3,138,758. Next year (after March), \$144,735 yearly will be saved for four years in interest on the first consolidated bonds by the reduction from 7 to 6 per cent. For two years the interest on the bonds issued for 60 per cent. of the convertible gold and second consolidated bonds will be funded, and this will amount to \$983,808 yearly in currency.

Thus the interest accruing yearly will be:

1875-76.....	\$994,345
1876-77.....	2,129,107
1877-78.....	3,112,915
1878-79.....	3,161,503
1879-80.....	3,161,503
1880-81.....	3,316,238

Now, assuming the last year's charges as that which the road could bear, we have the sum of the differences between that and the sums paid in preceding years as an addition to the capital of the road—a subscription made by the bondholders, amounting in the aggregate to more than \$4,000,000. This with the assessments on the shares would make about \$9,000,000 available to retire that part of the floating debt which has a claim prior to mortgage debts, and for the improvement of the road—enough to add materially to its facilities for doing its work economically.

Supposing the road put in order and earning a net income of \$3,316,238, it would just keep out of bankruptcy; when it earned net \$4,139,240 it could pay also interest on its income bonds; with \$4,651,454, it could pay dividends on the preferred stock; and for every addition of \$780,000 to the last amount of net earnings, it could pay 1 per cent. on the common stock. It would require a net income of \$9,381,454 yearly to meet all interest and preference charges and pay a 6 per cent. dividend on all the stock.

* After 1881; \$437,364 until then.

It is not at all improbable that the road, put in proper condition, with its gauge changed and its burdensome leases and contracts terminated and the business of the country flourishing, should earn this amount.

The gross and net earnings for several years past have been reported as follows:

Year.	Gross.	Net.
1869-70.....	\$16,179,402	\$1,354,602
1870-71.....	17,168,005	1,895,404
1871-72.....	18,371,888	3,913,621
1872-73.....	20,612,607	6,371,964
1873-74.....	18,598,598	5,035,100
1874-75.....	17,971,598	3,715,809

Some of these reports were incorrect and show too great net earnings; but there appears to have been no year since 1870-71 when the net earnings from the line, in its imperfect condition, did not exceed the fixed charges under the proposed reorganization. On the other hand, with the largest gross receipts heretofore known (\$20,000,000 in 1872-73), the expenses would have to be reduced to 57 per cent. in order to yield enough to pay a 6 per cent. dividend on the common stock; and this is not at all probable, with the low rates that are almost sure to prevail. The road must not only carry its traffic at less expense, but must get more of it, in order to reach this desirable object. But in any ordinary times and with the gauge of the road changed to the standard, it should be an easy matter to increase the traffic; indeed, it increased in spite of all obstacles previous to the collapse of 1873. But it is not necessary that 6 per cent. dividends should be paid to justify the assessments on the stock. It is now substantially worthless, and a 1 per cent. dividend will be an excellent return on the subscription of six dollars required of the common stock.

But what seems the weak point in the scheme is that if for any reason the road should not much more than earn interest, it would be in the hands of an immense body of shareholders who, failing the hope of dividends, would surely take so little interest in the property that its management might easily be "captured," as it has been heretofore only too often. However, if the shareholders provide new capital, as this scheme asks them to do, they certainly have a right to insist on the control which their shares give them.

Of course, the first condition of the success of such a scheme is that it be acceptable to those called upon to assent to it—to the various classes of bond and shareholders. In this case, probably, the chief practical difficulty will be to induce the shareholders to pay the assessments required. When men buy shares, it is usually with the hope of receiving money; and holders who have received but three dollars in ten years as dividends on their share, are likely to be very reluctant to pay out six dollars on its account. It is hard, but in this case it is certainly necessary if the proprietors would not lose entirely their interest in the property.

The Use of Steel.

The wonderful improvements which have been made during the last few years in the manufacture of steel, and the cheapness with which that material can be produced, have made it available for purposes for which only a short time ago it was impossible to use it, both on account of cost and the difficulty of its manufacture. Considering the remarkable qualities which it possesses and the changes which slight alterations of its treatment or condition will produce, it is perhaps not extraordinary that, in adapting it to the purposes for which iron has heretofore been used, considerable difficulty was encountered in securing the best attainable results.

In one condition steel has a degree of toughness which will enable it to be bent and twisted into almost any form. It may be as brittle as glass, nearly as hard as a diamond or the most elastic of all solid bodies. Considering that by a very slight alteration in its chemical composition, or in the way in which it is worked, it may be either tough, hard, elastic or brittle, it is of course plain that if the causes which produce these qualities are not perfectly understood, when it is intended to be very tough, as for a car axle, it may instead be brittle; or if meant to be elastic, as for a spring, it may be tough; or if needed hard, as for the top of a rail, or for a turning tool, it may be soft instead. Iron, as is well known, is not susceptible of as great changes of quality as steel, and therefore not so much care or knowledge is required either in its manufacture or subsequent treatment. The apparent uncertainties of the qualities which steel will assume, and the difficulties of producing any specified quality have been so great that it has been regarded as a very serious objection to its use, and has prevented it from being employed in many kinds of structures in which it would have been used if no such uncertainty existed. In only a few exceptional cases has it been used in bridges. For car axles its use has also been very limited, and for some purposes it has been abandoned, at least for the present, for the older, and, as it has been regarded, the more reliable material, iron. Now it would certainly reflect very

seriously on the value of science and on the skill of manufacturers if it should appear that steel could be made at one time with a degree of toughness far exceeding that of iron, but that neither science nor art could make it certain whether another piece of steel would have the same qualities to exactly the same degree. To say that the quality which any steel may possess is dependent upon chance would be a sort of scientific infidelity. The reason why it appears uncertain to us is because we do not know all the laws or circumstances which govern it. It is therefore not remarkable that the aid of both science and art should be sought, and that the two should combine to formulate the laws which govern the quality of steel, both in its manufacture and in working the manufactured article. In fact, to quote the language of Mr. Holley, "the method of treating steel—of heating and shaping it and building it successfully into machinery and engineering structures—must become, before this material can be employed to the best advantage, a distinct and highly developed art."

On the manufacture of steel there is already a considerable amount of literature, but on the methods of working it the little book which forms the text for this article is, we believe, the first, unless among such books some fragmentary articles should be included which have been issued by manufacturers of steel in the form of directions for working their products. This little book of J. Barba, a translation of which Mr. Holley has edited, describes a series of researches and observations into the working of steel for the construction of three large men-of-war which were ordered in 1873 by the French Government to be built at Brest and L'Orient.

The more important conclusions, as stated by the translator, to which the author arrives are:

"1st. Avoid local pressures in working cold steel.

"2d. If local pressures must occur, remove their effects by annealing—not once, but as often as dangerous pressures are produced."

The theory which underlies these conclusions rests upon the fact that iron and carbon are combined in two ways; first in solution and second in mechanical mixture. At a high temperature, the quantity of carbon held in solution is greater than at lower temperatures and pressures. By cooling the metal slowly a portion of the carbon will be separated from the solution and remain as a mechanical mixture; but if the metal is cooled rapidly more of the carbon will remain in solution, and less therefore will be separated and exist in mechanical mixture.

Great pressures have an effect similar to that of high temperatures, that is, under very great pressure more carbon is held in solution and less in mechanical mixture than if there is no such pressure; and if a piece of metal containing carbon in mechanical mixture is hammered, that is, subjected to great pressure, some of that carbon will be taken up into solution with the iron. For this reason, if steel is exposed to sudden changes of temperature or to great pressure, such as hammering, punching, etc., an important change takes place in its character.

Besides the effects stated of sudden changes of temperature, if, when any metal is rapidly cooled or tempered, to quote the words of the author, "the external layer cools first, . . . this cooled external layer contracts and presses strongly on the inside, which is yet at a high temperature. . . . In order to contain the internal volume, the external layer must stretch at the expense of their elasticity; if the tempering has been intense enough, they may exceed their limit of elasticity and stretch permanently."

That such an effect does take place, is shown by the chill cracks on the treads of car wheels and by the cracking of steel tools in tempering them. Of course the low steels—that is, steel with a small percentage of carbon, are very much less liable to defects from tempering than steel more highly carbonized; nevertheless, sudden changes of temperature and great pressure do have a deleterious effect upon even the low steels which are now manufactured for boiler plate, rails, etc.

The great danger in working steel plates is that due to internal strains produced by the different processes to which it is subjected. Of course such strains are not obvious to the eye, and therefore it is difficult to make uneducated or inexperienced workmen realize that they exist. In all the processes of bending, shearing, punching, flanging, etc., to which steel is subjected, it is therefore constantly necessary to guard against this danger. This can be done, it is said by the author of the little book referred to, by re-heating the whole piece of metal to a cherry-red heat, and allowing it to cool in the open air in a position or on a surface where it will cool regularly and equally. It is not sufficient either to anneal the piece after all the work is done on it; but if it be subjected to many different processes, such as punching, bending, etc., it should be annealed several times. Mr. Krupp recommends that when a plate must be bent to a right angle, that is for a flange etc., it should be bent first to 30 degrees, then to 60, and then to 90 degrees; that is to say, instead of performing the whole operation at once it should be done one-third at a time.

The danger of producing internal strains in steel when

* Year ending with June; the other years and with September.

† The Use of Steel for Construction Purposes, by J. Barba, Chief Naval Constructor at L'Orient. Translated from the French, with a preface by Alex. L. Holley, C. E. New York, D. Van Nostrand.

working it cannot be too forcibly impressed on workmen, and they should be taught if possible that the injury from this cause can be prevented or the evil overcome by annealing. Every master mechanic will know how difficult it is to do this, and Mr. Barba relates that in some operations which required special care, they found it necessary to employ carpenters instead of skilled metal-workers, because it was impossible to induce the latter to follow the directions and methods which it was found necessary to employ in working steel.

The investigations of the writer of this book into the effects of punching and shearing show very clearly the injurious effects of the first of these processes. He has shown, however, that the injury extends over a very much less area than has sometimes been supposed, and that it is confined to only about 0.04 in. from the edges of the punched or sheared parts. If the holes are drilled, or if they are punched smaller than necessary and then reamed out, it is found that no such injury is done. What seems, however, quite strange—and in this the experiments of the author confirm those of other investigators—it is found that annealing the plates after punching or shearing destroys the effects of these operations. Experiments were also made to show the effect of a punch working into a die of very nearly the same diameter as the punch, and into one larger than the punch. These showed that when the punching was done near the edge of the plate, the punching done with a small die was more injurious than that done with a large die. At some distance from the edge, however, no apparent difference was discoverable. It would seem, however, that it would be safest in all cases to use a die somewhat larger in diameter than the punch.

The manner of investigating the effects of punching and shearing was very ingenious and complete. Strips of metal were taken and the edges sheared off on one side and punched continuously along the other. These strips were then bent until cracks began to show themselves. These always appeared first next to the punched edge, and then along the sheared edge. Test pieces were also punched, others punched and the holes then reamed out, and still others drilled, and then subjected to tension. It was found that substantially the same results were obtained in both cases whether the holes were drilled or whether they were punched and then reamed about one-twelfth of an inch larger in diameter. In order to observe more closely the effect of the different processes, pieces were drilled, others reamed, and still others punched, and then all the metal surrounding the hole was turned off excepting a small ring around the hole. This was then bent, or rather collapsed, so as to show the toughness. In each case it appeared that the material around the drilled and reamed holes was not injured, whereas that about the punched hole was very brittle and broke very easily.

Other experiments made by Mr. Barba showed that when a strip of metal with a hole in it is torn apart, "the central fibres stretched less than the others, and indicates a rupture beginning at the center." It was shown in these pages some time ago, from an experiment with an india-rubber band with a hole cut in it, that when the band is stretched the fibres next the hole are stretched more than those farther off. The same thing occurs in iron or steel, which accounts for the fact that "rupture begins at the center." It is therefore, we think, of the utmost importance that the metal which is exposed to the greatest strain should have the maximum strength, and not be rendered brittle or have incipient cracks in it from which rupture may start.

That the working of steel must become "a distinct and highly developed art" is, we think, made very obvious by the investigations of Mr. Barba, and that the use of this material will be extended just in proportion as this art is developed and acquired is equally certain; and many of the difficulties which have heretofore been experienced in its use will doubtless disappear just so soon as the necessary information is acquired for using and working this remarkable material which promises to make 1876 the dividing period between the age of iron and the age of steel.

The Lake Shore Wheel Report.

As there has been a good deal of inquiry about the methods of keeping "wheel reports" on different railroads, the following account of the method of keeping such reports on the Lake Shore Railroad will be interesting to many of our readers, especially those who contemplate keeping an account of the performance of the wheels they use during the next year. On the road referred to this account has now been kept for nearly two years. Its method is to keep a record of the actual mileage of all its passenger equipment. The date when wheels are taken out or put under these cars is also recorded, so that it is possible to determine their actual mileage. The service of wheels used under freight cars is determined by the time they have been in use, and not by the actual mileage of the cars. The accounts are, however, kept entirely separate, and the performance of passenger-car wheels is printed, and the service of wheels bought of manufacturers is estimated from that account.

There has been a great deal said about the cost of keeping the mileage of cars, and of the performance of wheels; and it will therefore be interesting to know just what the actual cost is on a road like the Lake Shore.

In keeping the account of car mileage the conductor has a blank printed on the same sheet with his free passenger report. The car mileage report has three columns headed "where taken," "car number," "where left." Under these the corresponding data are entered, and the blanks sent to the clerk in charge of this work. The parties who remove old wheels are all furnished with blanks divided into two general heads, one "wheels removed," and the other "wheels substituted." The first has columns with the following heads: "Date when put under," "maker's name," "number of car," "number of wheels," "cause of failure." Under the general head of "wheels substituted" there are the following columns: "Date when substituted," "number of wheels," "maker's name," "remarks." These blanks are filled out each month and forwarded to the clerk. He has a book, the pages of which are 15 x 22 in. in size, and one page is devoted to each car. This is divided into columns headed "date," "mileage," and "wheels removed." There are five sets of these columns, and as the pages are ruled crosswise with 147 lines, there are 735 lines, or enough for two years. In this book the clerk enters the mileage of each car for every day in the year from the conductors' reports, and under the head of "wheels removed" he enters the reports of the car-builders. All that must then be done is to determine from this book the mileage of the car from the time the wheel is put under to the time it is taken out. The date when the wheel is put under is stamped on the wheel, so that the person who removes it can easily determine the time it has been in service.

The cost of doing this work was \$18 for the book referred to, the cost of the blanks, and an extra salary of \$400 paid to a clerk for entering the reports in the book at night or in "over time."

We regret that our space will not permit us to print the report of car-wheel service during last year entire, as it contains much valuable information. The following summary gives, however, its general conclusions:

33-INCH WHEELS.		
	Average mileage wheels worn out.	Average mileage of all wheels including defective ones.
L. S. & M. S. Foundry.....	61,626	58,314
No. 1 Purchased.....	63,102	54,170
" 2 ".....	53,528	48,434
" 3 ".....	54,907	50,574
Total average.....		53,431
30-INCH WHEELS.		
L. S. & M. S. Foundry.....	45,879	45,240
No. 1 Purchased.....	41,599	41,549
" 2 ".....	49,045	43,834
" 3 ".....	30,632	27,851
Total average.....		44,355
28-INCH WHEELS.		
L. S. & M. S. Foundry.....	39,434	37,863
No. 1 Purchased.....	30,868	30,671
" 2 ".....	43,344	35,858
" 3 ".....	29,057	24,056
Total average.....		35,311
26-INCH WHEELS.		
No. 2 Purchased.....	44,881	35,818
" 3 ".....	20,706	20,706
Total average.....		34,979

For freight-car wheels this company requires for ordinary box cars a service of 2½ years; for coal and flat cars three years; for what are called express "line cars" two years, and for stock cars one year.

The Purchasing Agent of the company, to whom we are indebted for the above information, has informed us that during the past year the company made about \$3,500 in wheels replaced, which, without this account, they would not have received; and that the value in the increased service and improved quality of the wheels was many times that amount.

The German Railroads in 1873.

The German Railroad Union collects yearly statistics of the roads belonging to it, including nearly all of those in Germany and the Empire of Austria-Hungary, together with a small mileage of connecting roads, chiefly in Holland, Belgium, etc. The whole forms a system covering the entire country in which the German language is spoken, so that it is not improper to speak of it as German, though including much that is not German. It covers the territory from France and Switzerland east to Russia, and from the Baltic south to Italy, Turkey and the Principalities between Turkey and the Adriatic.

The report for 1873 gives statistics for 96 railroad companies or managements, with 129 separate lines—14 more lines than in 1872. A great number of extensions of lines was added during the year. The mileage worked was:

	Total.	Average.
German railroads—		
State railroads.....	5,652	6,481
Private roads worked by the State.....	1,588	1,545
Private roads worked by companies.....	6,836	6,399
Total German.....	14,766	14,425
Austro-Hungarian railroads.....	9,658	9,147
Foreign railroads.....	1,907	1,997
Total.....	26,421	25,569
Total in 1872.....	23,890	23,807
Increase.....	2,531	2,762

There was an average of 275 miles under one management in 1873 (nearly the same as the previous year). Eleven managements worked a thousand kilometers (621.4 miles) or more, the greatest mileage being that of the Austrian Southern,

1,423 miles; the smallest that of the Nuremberg & Fuerth, 3½ miles.

Of the whole mileage, 23.41 per cent. was double-track—33.67 per cent. on the German, 9.91 on the Austro-Hungarian, and 12.77 per cent. on the foreign roads. The total length of all the tracks in these roads, including sidings, etc., was 40,376 miles—1.58 miles of track to each mile of road.

The authorized capital of these companies amounted to \$2,112,099,309, which is almost exactly \$80,000 gold per mile of road. Of this

42.3 per cent. was common stock,
3.4 per cent. was preferred stock, and
54.4 per cent. was funded debt.

Thus the German roads resemble the American in having more capital in bonds than in stock. However, 32.34 per cent. of the entire capital has the interest guaranteed by the States in which the railroads were built, while in some States there is also a guarantee of a certain amount of net earnings.

The capital expended was \$95,422 gold per mile in 1873, against \$92,363 in 1872, an increase of 3.31 per cent. The amount per mile varied greatly, being but \$23,926 on the Cottbus & Grossenhain, and \$180,790 on the Empress Elizabeth Main Railroad. Of the very cheap roads, next to the Cottbus & Grossenhain mentioned above is the Nuremberg & Fuerth, \$23,950 per mile, then, in order of cheapness, roads costing \$33,900, \$35,500, \$39,425 and \$41,580 per mile.

The passenger cars at the close of the two years named were:

	4-wheeled.	6-wheeled.	8-wheeled.	Total.
1873.....	17,125	5,137	736	22,998
1872.....	13,892	4,564	749	19,475

Thus with an increase of 18 per cent., there was a decrease in the number of 8-wheeled cars, which seem to be disappearing from Europe, except in Switzerland.

These cars afford seats for the following numbers of passengers of each class:

	First class.	Second class.	Third class.	Fourth class.	Total.
1873.....	37,672	214,492	558,404	138,545	969,113

The total seating capacity increased 17½ per cent. in the year.

There were 1,996 passenger-car axles and seats for 36.95 passengers per mile of road. The Nuremberg & Fuerth road had seats for 302.6 passengers per mile of its road—nearly three times as many as any other; the Southern Hungary State Railroad seats for 6 per mile only.

The number of the places per axle was 18.46 in 1873 against 18.25 the previous year, giving an average capacity for 37 persons to the prevailing four-wheeled car.

The average service of passenger cars was a run of 21,477 miles each during the year 1873, equivalent to an average run of 59 miles daily. The service varied from 44,450 miles per car on the Lemberg & Czernowitz to 4,660 on the Lambach & Gmunden.

The proportions of the capacity of the cars moved which was occupied by passengers was, on the average, 25.28 per cent. in 1873, 25.92 in 1872, 25.09 in 1871 and 29.92 in 1870; the tendency being very plainly, to run with cars less and less filled. The proportion varied from 12.81 per cent. on the Cottbus & Grossenhain to 53.15 on the Kirchheim Railroad.

On the average, passenger axles ran 44,960 miles per mile of road in 1873, against 42,341 in 1872.

The companies in the Union owned at the close of 1873, 630 mail cars—34 6-wheeled, 27 8-wheeled, the rest 4-wheeled.

The number of baggage cars was:

	4-wheeled.	6-wheeled.	8-wheeled.	Total.
1873.....	4,177	1,077	142	5,396
1872.....	3,541	1,005	144	4,690

These ran an average of 27,082 miles each in 1873.

The number of freight cars was:

	4-wheeled.	6-wheeled.	8-wheeled.	Total.
Open.....	158,526	3,256	1,591	163,373
Covered.....	88,501	2,670	898	92,069
Total.....	247,026	5,926	2,489	255,441

The total number in 1872 was 231,664, and the increase was 15 per cent.

There were, on the average, 19.65 freight-car axles per mile of road in 1873, against 18.9 in 1872, and 17.7 in 1871. The number varied from 1.07 per mile on the Greis & Brunn road to 98.3 on the Aussig & Tepitz. The number of cars is nearly half as great as the number of axles, as nearly 97 per cent. of the whole number are 4-wheeled.

The capacity for load of all the mail, baggage, freight and service cars on the roads of the Union was 2,784,797 tons, equivalent to the capacity of 278,474 ordinary American freight cars, and their average capacity per mile of road was 104.8 tons.

The average freight-car performance was 8,990 miles for the year 1873, varying from 915 on the Orefeld Industrial Railroad to 17,035 on the Neisse & Brieg. The average load per axle actually carried was 2.112 tons, which was 41.01 per cent. of the carrying capacity, so that the average carrying capacity of freight cars on all the railroads of the German Railroad Union in 1873 was 5.15 tons, or 10,300 lbs. per axle, at which rate American freight cars should be able to carry 41,200 lbs. each,—twice as much as is generally the rule.

The average mileage of freight-car axles was 189,583 per mile of road, varying from 11,075 on the Kirchheim Railroad to 666,526 on the Lower Silesian & Maerk—the latter being at the rate of 9,131 axles each way daily.

The cars of all kinds made 6,513,383,180 axle-miles during the year, an average of 253,267 per mile of road, against 241,865 in 1872, 242,003 in 1871, 240,779 in 1870, 246,925 in 1869 and 256,521 in 1868. This axle mileage was greatest on the Lower Silesian & Maerk road—790,631 per mile of road, equivalent to 1,083 axles hauled each way daily, and to a capacity of about half as many American cars.

The expenses per car axle-mile were 0.0235 cent. gold, for lubricating and cleaning and 0.1582 for repairs, in 1873, or to 0.1817 cent in all, equivalent to 0.212 cent currency, or 0.424 per mile run of a car of the capacity of ordinary American cars.

The locomotive statistics are:

	1873.	1872.
Number of locomotives.....	11,652	10,062
Number per mile.....	0.434	0.419
Number miles of road to one locomotive.....	2.304	2.386

In 1873 of the whole number of locomotives 223 were four-wheeled, 9,615 six-wheeled, 821 eight-wheeled, and 993 were tank locomotives. There were in addition on the Saxon State railroads 11 locomotives used solely for transporting material for the roads.

There were 1,754 four-wheeled and 8,828 six-wheeled tenders in 1873.

The increase in traction capacity is estimated at 15.2 per cent. from 1871 to 1872, and at 15.8 per cent. from 1872 to 1873, and the total horse-power of the locomotives of the Union at the close of the latter year is estimated to be about 2,913,000—an average of 250 horse-power per locomotive.

The greatest number of locomotives per mile was 1.6, on the Nuremberg & Fürth Railroad; the least 0.08, on the Hungarian Southern State Railroad and also on the Danube & Drave. The approximate cost of the locomotive equipment is given as \$148,268,000 gold, which is at the rate of \$12,725 for each locomotive, and \$51 per horse power. The average distance run per locomotive was 18,921 miles in 1873, against 18,390 miles in 1872. Something more than 29 per cent. of the entire locomotive mileage in 1873, and 27 per cent. in 1872, was expended in switching and running without trains. In 1873 there were hauled 1,164,846 express and passenger trains, and 2,088,102 freight and other trains, and there was an average of 41.56 axles in each train, against 41.03 in 1872. The average consumption of coal per traffic train-mile was 53½ lbs., against 52½ lbs. in 1872. It varied from 26 lbs., on the Crefeld Industrial Railroad, to 92½ lbs., on the Bruenn & Rositz. The average consumption of fuel of all kinds per axle-mile in 1873 was 1.4593 lbs.—the axle generally representing one-half (but sometimes one-third) of a car of 11 tons capacity.

The cost of fuel was:

	1873.	1872.
Per train-mile	11.7 cts.	10.2 cts.
Per axle-mile	0.17496	0.15692

Probably about equivalent to 0.41 cent. and 0.36 cent. currency to an American car-mile. Per traffic train-mile the cost of fuel varied from 3.159 cents gold on the Graz & Kofach to 24.592 cents on the Roumanian Railroad.

The cost of repairs of locomotives and tenders rose from 5.71 cents gold in 1872 to 6.05 cents in 1873; the cost of cleaning and lubricating, from 1.825 cents to 1.840 cents.

The number of persons and tons of freight forwarded on the railroads of the Union for two years has been:

	1873.	1872.	Increase.	P. c.
Passengers.....	240,515,176	203,545,806	36,969,370	18.16
Tons.....	180,562,327	154,281,376	26,280,951	16.99

The percentage of passengers of each of the four classes and of soldiers and others carried at reduced rates for five years has been:

	1873.	1872.	1871.	1870.	1869.
First class	1.71	1.85	1.51	1.34	1.64
Second class.....	16.22	16.12	15.31	14.45	16.26
Third class.....	61.30	59.71	58.87	56.23	61.48
Fourth class.....	17.08	16.92	14.72	14.23	15.38
Military, etc.....	3.79	5.60	12.59	13.75	5.29

In explanation of this, it should be said that the fourth class is not universal, and so forms a much larger proportion of the traffic on those roads which have a fourth class. The trifling proportion of the first class is remarkable. The third and fourth classes form more than three-fourths of the whole whenever there is not a large proportion of soldiers, as in the war years, and not even the second class ever reaches one sixth of the total.

The bulk of the passenger traffic and the average amount per mile was:

	1873.	1872.	Increase.	P. c.
Passengers carried one mile.....	5,331,309,093	4,547,653,489	783,716,204	17.23
Passenger mileage per mile of road.....	309,972	300,874	9,098	4.63

The passenger mileage per mile of road was 212,658 in 1871, 206,449 in 1870 and 185,999 in 1869. This is the gauge of the passenger traffic of the roads. For 1873 it was equivalent to 288 passengers each way daily over all the roads—about enough to fill six American cars full.

The amount of passenger traffic per mile of road varies greatly, as here, being no less than 1,157,000, or at the rate of 1,585 passengers each way daily, on the Nuremberg & Fürth, and 4,000, or but 5½ each way daily, on the St. Hetzendorf-Kaiser Eberdorf. The average journey of the passengers on the whole system was about 22½ miles in 1873 and about a fiftieth of a mile less in 1872. The average receipt per passenger per mile was 1.508 cents gold in 1873 against 1.548 in 1872—equivalent to 1.759 and 1.806 cents respectively in American currency at the present price of gold.

The percentages of local and through passenger traffic respectively were:

	1873.	1872.	1871.	1870.	1869.
Local.....	58.54	58.03	55.10	56.50	57.95
Direct and through.....	11.46	11.97	14.90	15.50	12.05

The same percentages for freight traffic:

	1873.	1872.	1871.	1870.	1869.
Local.....	41.35	43.60	49.98	44.765	45.73
Direct and through.....	58.65	56.50	50.02	55.235	54.27

The number of tons hauled one mile on the whole system of the Union and the same per mile of road were:

	1873.	1872.	Increase.	P. c.
Tonnage mileage....	9,414,614,199	7,932,304,984	1,482,409,215	18.53
Tonnage mileage per mile of road.....	379,834	359,637	20,197	5.62

The latter, which is the measure of the frequency of the traffic, was equivalent to a movement of 520 tons, or 52 American car-loads, each way daily over the whole system of roads. The freight traffic varied in amount from 1,822,600 ton-miles per mile, or 2,500 American car-loads each way daily, on the Upper Silesian Railroad, to 7,719 ton-miles per mile, or 10½ car-loads per day each way, on the Nuremberg & Fürth. The average distance the freight shipments were moved was a trifle less than 55 miles in 1873 and not half a mile less in 1872. The average receipt per ton per mile was 1.846 cents gold, in 1873, against 1.901 in 1872—equivalent at the present price of gold to 2.154 and 2.218 cents respectively in American currency.

The receipts of all these railroads were in gold:

	1873.	1872.	Increase.	P. c.
Passengers.....	\$83,706,386	\$72,111,308	\$11,595,078	16.08
Freight.....	192,028,947	166,364,663	25,664,284	15.37
Other sources.....	14,435,347	14,383,860	51,797	0.36

Total.....\$290,170,680 \$252,859,831 \$37,311,314 14.65

The gross receipts increased 7.55 per cent. from 1871 to 1872, 19.15 per cent. from 1870 to 1871, and 6.43 per cent. from 1869 to 1870.

The average receipts per mile of road in gold were:

	1873.	1872.	Increase.	P. c.
Gross receipts.....	\$11,386	\$11,080	\$290	2.63

In 1873 the receipts per mile varied from \$34,984 on the Emperor Ferdinand Northern (Austrian) to \$1,605 on the Lundenberg & Grubach Railroad.

The average receipts per traffic train mile were \$1.6657 both in 1873 and 1872, and the receipts per train mile of all kinds varied from \$3.812 on the Ostrau & Friedland to \$0.6894 on the Upper Hessian Railroad.

The proportion of receipts from the different branches of traffic for five years have been:

	1873.	1872.	1871.	1870.	1869.
Passengers, per cent.....	28.86	28.52	27.90	27.94	26.35
Freight, per cent.....	66.30	66.79	66.56	67.08	68.03
Other, per cent.....	4.94	5.69	5.54	5.03	5.12

This shows a proportion more like that of American railroads than those of the English system, which get nearly half of their earnings from passengers. It shows too, a tendency to an increase in the proportion of passenger receipts; while in Great Britain it is the freight which gains on the passenger receipts.

The working expenses of the railroads, which had for some time been increasing on account of the rise in wages and prices, were higher in 1873 than ever before—23.05 per cent. more than in 1872, while there had been an increase of 20.82 per cent. from 1871 to 1872. They were per mile:

	1873.	1872.	Increase.	P. c.
Road expenses.....	\$2,012	\$1,827	\$185	10.1
Transportation expenses.....	4,184	3,893	291	7.5
General expenses.....	376	335	41	12.2

Total working expenses..\$6,572 \$6,055 \$517 8.5

The increase in total expenses per mile was 7.97 per cent. from 1871 to 1872, 9.63 per cent. from 1870 to 1871, and 0.32 per cent. from 1869 to 1870.

The expenses per traffic train mile were:

	1873.	1872.	1871.
	\$1.09	\$1.03	\$1.00

In 1873 these expenses varied from \$2.12 per train-mile on the Danubius Railroad to 51½ cents on the Oldenburg road.

The proportion of expenses charged to road, transportation and general expenses for five years has been:

	1873.	1872.	1871.	1870.	1869.
Road expenses.....	31.13	30.69	31.18	31.44	31.92
Transportation expenses.....	63.04	63.67	63.52	62.79	62.66
General expenses.....	5.84	5.64	5.30	5.77	5.52

The proportion of working expenses to gross receipts has been for six years the following percentages:

	1873.	1872.	1871.	1870.	1869.
	57.87	54.67	47.10	45.85	44.33

In 1873 this percentage of working expenses varied from 37.67 on the Graz & Kofach to 130.37 on the Vorarlberg Railroad. It was 66.30 per cent. on the German State railroads, 58.21 per cent. on the German private railroads worked by the State, and 58.19 per cent. on the German private railroads worked by the companies owning them. On the Austrian and Hungarian roads it was 50.48 per cent., and on the foreign railroads in the Union 55.69 per cent.

The average net earnings per mile of the railroads in the Union were:

	1873.	1872.	Decrease.	P. c.
Net earnings.....	\$4,834	\$5,087	\$253	4.61
Net earnings.....	\$5,067	\$6,108	\$1,041	17.05
Net earnings.....	\$6,108	\$5,923	\$185	3.16

The large decrease in average net profits per mile, amounting in two years to 21 per cent., was due to two causes: one an increase in mileage greater than the increase in traffic, and the other the great increase in prices of labor and supplies, while there was no increase in rates. Twelve railroads in 1873 had no net earnings, their expenses being greater than their gross receipts.

The net receipts formed the following percentage of the capital expended on the roads:

	1873.	1872.	1871.	1870.	1869.	1867.
Per cent.....	5.0	5.4	6.7	6.6	7.3	7.5

The downward tendency is marked. In 1873 the income on the investment was just a third less than in 1867. It was this decreasing profit that led to the passage of a law in the German Empire last year authorizing the railroads to increase their freight rates, with some exceptions, by 20 per cent.

The rate of profit varied from 28.78 per cent. on the Nuremberg & Fürth Railroad to 0.025 per cent. on a Silesian road. Ten roads earned more than 10 per cent., 19 from 7 to 10 per cent., 30 from 4 to 7 per cent., 31 from 1 to 4 per cent., and 29 less than 1 per cent.

These figures relate to the percentage of net income on the entire capital invested, which was disposed of for sinking funds and certain renewal funds, as well as for interest on bonds and dividends on stock. The dividends were on the average 4.60 per cent. on common and 5.96 per cent. on preferred stock in 1873, against 5.66 and 6.80 in 1872.

The railroads had at the close of the year reserve, renewal and pension funds amounting in the aggregate to about \$55,000,000, accumulated from net earnings since the roads were first opened.

There were on the roads during the year 231 train accidents, of which 91 were collisions and 65 derailments. By these accidents 70 persons were killed and 493 injured. Of these, 29 killed and 210 wounded were passengers; 41 killed and 265 injured, employees; and 8 injured, other persons. Besides these injuries to persons without fault of their own, there were 787 persons killed and 499 injured by their own fault. There were further 443 train accidents by which no one was hurt. Again, there were other accidents on the road or at stations, or on trains not in motion, by which 46 persons were killed and 105

injured without fault of their own, and 883 killed and 802 injured by their own fault. Altogether, 1,286 persons were killed and 1,889 injured on the Union railroads in 1873, of which 1,170 killed and 1,301 injured were themselves at fault. One passenger out of 977,704 was killed or injured without fault of his own. There was one injury to every 780,603 trains.

There were 269 cases of breakage of axles—27 under locomotives, 52 under tenders, 16 under passenger coaches and 174 under freight cars. There were 1,712 cases of breakage of rails.

Traffic was interrupted seriously in 101 cases for a total period of 120 days (almost exclusively on Austrian and Hungarian railroads). Of these interruptions, 17 were caused by the sliding of embankments, 19 by snow, 14 by floods and 44 by other causes, in many cases by train accidents.

Record of New Railroad Construction.

This number of the Railroad Gazette has information of the laying of track on new railroads as follows:

Peach Bottom.—The Eastern Division is extended from Goshen, Pa., west to Eldora, 2 miles. It is of 3-foot gauge.

Cincinnati, Wabash & Michigan.—Extended southward 3 miles to Summitville, Ind.

Grinnell & Montezuma.—Track is laid from Grinnell, Ia., southeast to Montezuma, 15 miles.

Wyandotte, Kansas City & Northwestern.—Extended from Independence, Mo., eastward 7 miles. It is of 3-foot gauge.

This is a total of 27 miles of new railroad, making 1,264 miles completed in the United States in 1875, against 1,808 miles reported for the same period in 1874, 3,606 miles in 1873, and 7,065 in 1872.

Mr. GEORGE S. BANGS, who has been for more than four years Superintendent of Railway Mail Service in the Post-Office Department, is reported to have resigned, in order to accept a position in the service of a manufacturing company. While it was doubtless political influence which gained Mr. Bangs his introduction to post-office business—he was the publisher of a newspaper, and was made postmaster of his town during Lincoln's administration—he justified his promotion to the head of an important branch of the service by efficient work such as we do not often get and usually do not at all expect under our peculiar civil service. Mr. Bangs' duties have brought him constantly in contact—perhaps sometimes in conflict—with railroad officers and managers; and he has won with them the character of a faithful, energetic and capable official. His department was but fairly begun when he succeeded to its charge, and the organization of the postal car service has been largely due to him, as was chiefly the securing of the fast mail trains between New York and the West.

FOUR-TRACK RAILROADS are still rare enough to be remarkable. The London & Northwestern has the largest mileage, we believe, aside from the New York Central, but it has as yet but a little. From London to Watford, 17½ miles, its four tracks have been used for some time, and from Watford to Bletchley, 29½ miles, a section will soon be completed. It has 14½ miles of third track between Rugby and Nuneaton, and 24½ between Stafford and Crewe. Soon it is expected to have four tracks for the entire distance between London and Rugby, 82½ miles. This road is the most crowded line of considerable length in Europe, and has a very complex traffic—express, messenger, fast freight (20 to 25 miles an hour) and mineral.

BOSTON RATES WESTWARD have again been a cause of trouble for traffic ten times as important as that from Boston. The trouble is that the Grand Trunk wants a share of Boston business, which it cannot get, especially in winter, if it asks as much as the shorter routes do. Thus it underbids the shorter routes, or tries to, and they meet its rates from Boston, until rates there are made much lower than New York rates. Then there is a discrimination against New York business which becomes insufferable, till at last the trunk lines reduce New York rates also. The result is a traffic by which even the shortest line makes no profit, either from Boston or New York. This makes Boston business especially undesirable to the Grand Trunk, whose expenses are greatest; but whether this will lead it to cease insisting on a lower rate than the other roads is questionable. Fortunately, west-bound traffic is not very large at this season.

General Railroad News.

OLD AND NEW ROADS.

Wisconsin Valley.

Local papers report that this road is to be extended from Tomah, Wis., westward, through Sparta to La Crosse, which seems hardly probable, as the line would be parallel and close to the La Crosse Division of the Chicago, Milwaukee & St. Paul, and the Wisconsin Division of the Chicago & Northwestern. Any extension which the company may be able to make is more likely to be on the other end of the line, from Wausau, northward, into the lumber country.

Indianapolis & Southwestern.

It is proposed to build a narrow-gauge road from Indianapolis south by west through Marion, Johnson, Brown, Lawrence, Greene and Martin counties, connecting with the Ohio & Mississippi near Shoals Station. It is said that it would pass through a timber region and would open up deposits of iron ore and kaolin, and some quarries of fine building stone, besides tapping the coal mines of Greene County. Meetings are being held along the line to advocate its construction.

Illinois Midland.

The Winter time table of this road shows only one passenger train which runs through between Terre Haute and Peoria, leaving Terre Haute at 8:30 a. m., and Peoria at 8:20 a. m. There is one through freight each way between Terre Haute and Peoria, a local freight between Terre Haute and Decatur and one between Decatur and Peoria.

It is said that there is a movement on foot among some of the dissatisfied stockholders to see if the consolidation of the Paris & Decatur and the Peoria, Atlanta & Decatur and the formation of the present company cannot be set aside, and the Paris & Decatur placed once more upon an independent foot-

ing. We do not know upon what grounds the movement is to be based, or how much support it may have.

Fort Wayne, Muncie & Cincinnati.

Through cars are now run between Fort Wayne and Indianapolis, over this road and the Cleveland, Columbus, Cincinnati & Indianapolis. A considerable passenger traffic is springing up by this line.

Spring Hill & Parramore.

The grading of this road is now completed, and the bridges are all ready. The work has been suspended for the winter, but tracklaying will be begun next spring. The road, which is about 25 miles long, will run from the Intercolonial near Spring Hill, N. S., south by west to Parramore on the Basin of Minas. It will open up a coal region of considerable value.

Bellaire & St. Clairsville.

This company has filed a certificate of incorporation with the Secretary of State of Ohio. The capital stock is to be \$50,000, and the road of three-foot gauge. It is to run from Bellaire, O., west by north about 15 miles to St. Clairsville.

Havana & San Jose.

This company has been organized, with a capital stock of \$150,000, to build a narrow-gauge road from Havana, Ill., eastward 25 miles to San Jose, on the Jacksonville Division of the Chicago & Alton.

Western Counties.

The work on all the heavy cuts and fills on the unfinished sections between Yarmouth (N. S.) and Digby has been sublet, and will go on through the winter as far as the weather will allow. Contracts have been let for 130,000 ties, to be supplied by parties about Meteghan. The engineers are now locating the line from Digby to the northeastern terminus at Annapolis.

Cherry Valley, Sharon & Albany.

It is stated that this road will shortly be sold under foreclosure of mortgage. It is 21 miles long, from Cherry Valley, N. Y., east by south to the Albany & Susquehanna at Cobleskill. Most of the stock was owned by the towns along the line, but arrangements were made some time since for its transfer to the Delaware & Hudson Canal Company.

Vassar & Port Austin.

It is proposed to build a narrow-gauge railroad from Vassar, Mich., on the Detroit & Bay City road, northeast to Port Austin in Huron County, at the entrance to Saginaw Bay. The distance is about 60 miles, through a country for the most part unsettled, but said to be fertile.

Lake Erie, Alliance & Wheeling.

About 27 miles of this road is graded, leaving nine miles more to be done to complete the road-bed to the Painesville & Youngstown at Farmington, O. This last section is said to be very light work.

Kalamazoo, Lowell & Northern Michigan.

Arrangements have been made for iron and equipment with Eastern concerns, and the people on the line are rejoicing at the prospect of an early completion of the road.

Logansport, Crawfordville & Southwestern.

The application of Charles W. Hassler and others, holders of first-mortgage bonds, to have Mr. Schuyler, the present Receiver, removed and a receiver appointed in their interest came up in the United States Circuit Court at Indianapolis, Dec. 14. The Court referred the case to a master in chancery, to take further evidence.

Worcester County Central.

A new survey is to be made from Worcester, Mass., to Hartford, Conn., passing through Leicester, Spencer, Brookfield, Fiskdale and Wales in Massachusetts, and Stafford Springs and Rockville in Connecticut. Several towns have contributed their share of the cost.

Toledo, Peoria & Warsaw.

Holders of first-mortgage bonds who desire to join in the proceedings now being taken for the protection of their interests are requested to communicate with the committee, R. C. Martin, H. De Coppel and John S. Barnes. Their address is: care of Jacquelin & De Coppel Bros., No. 19 New street, New York.

Davenport & St. Paul.

The disagreement between the German and American bondholders, which has delayed the sale of the road, is to be submitted to the United States Circuit Court at the January term, by consent of both parties. It appears that the American parties hold \$500,000 bonds which were deposited to secure a loan of \$224,000. The German bondholders claim that these bonds should share in the proceeds of the sale only to the amount of \$224,000, while the holders claim a share to the full face of their bonds, \$500,000. As soon as this question is settled there will be no further obstacle to the sale of the road.

Scioto Valley.

Work on this road is progressing steadily, and it is said to be done in a substantial manner. The ties on the Columbus end of the line are being put in place, and the rails are being laid as fast as received, the work beginning at the crossing of the Columbus & Hocking Valley road. Grading was begun last week at Chillicothe.

Connecticut Central.

The lease of the road to the Connecticut Valley, which will soon be executed, will take effect Jan. 1, about which time trains will begin to run through to Springfield. The Central Company is to build all the depots required on the line.

Bloomington, Lacon & Eastern.

This is one of the many narrow-gauge lines now projected in Illinois, and is to run from Bloomington, Ill., northwest to Lacon, about 50 miles.

Bloomington & Illinois River.

This company, just organized at Bloomington, Ill., proposes to build a narrow-gauge line from the east line of McLean County, Ill., westward through Bloomington to the Illinois River, about 65 miles. It would be everywhere parallel and close to existing lines.

White River.

This road is to run from the Vermont Central at Bethel, Vt., westward to Rochester and perhaps further. Governor Smith has offered to build it if the towns along the line will raise \$150,000, and Rochester has voted \$32,800 of the amount, and is trying to raise \$17,200 more by private subscriptions. The distance from Bethel to Rochester is about 10 miles, and the offer of Governor Smith is said to be intended to head off the proposed Green Mountain road.

Macon & Brunswick.

The Superintendent, under directions of the receivers, has been, for some time past, doing what the earnings of the road would allow to put the track in good condition. Many new rails and ties have been used and a large amount of new timber put in the bridges and trestles. A Florida express train is now run over the road, with through car from Louisville, Ky., to Jacksonville, and this train makes the run of 146 miles from Macon to the crossing of the Atlantic & Gulf at Jessup in six hours and 40 minutes, an average of about 22 miles an hour,

including stops—no great speed compared to the New York Central or Pennsylvania fast mail, it is true, but a rate that could not have been safely made over the road a year ago, and faster than is common on Southern roads. This train is now continued on to Brunswick, whence a steamboat runs to Jacksonville, giving through passengers the alternative of an all-rail or a rail and water route.

Ottawa, Oswego & Fox River Valley.

When this road was built a number of people in and about Aurora, Ill., subscribed to the stock and gave their notes for the amount. Payment of many of these notes was subsequently refused on the ground that the road had not been completed as a competing line, as promised. The courts, however, have decided that the notes must be paid, and a meeting of the parties was held in Aurora recently. After some discussion Mr. Charles Wheaton was delegated to see what terms could be made with the company.

A Daring Train Robbery.

A little after 4 o'clock, on the morning of Dec. 18, the express car of a train on the St. Louis, Kansas City & Northern road, which was then near Ferguson, Mo., was entered by several armed and masked men, who thrust the messenger into a large chest, locked him in, and proceeded to rob the safe of the money which it contained, variously estimated at from \$10,000 to \$20,000, and left the car at some point before it reached St. Louis. The messenger was taken out of his chest unhurt, but nearly smothered. The whole affair took place so quickly that the messenger, who was half asleep at the time, thinks he could not identify the men. The doors, besides the ordinary lock, are furnished with a chain which prevents them from being opened more than a few inches, unless the chain is unfastened from the inside. The messenger, however, on taking charge of the car at Kansas City, noticed that the staple of the chain on the rear door had been taken out, rendering it useless, and he accordingly put a heavy trunk against that door, which, however, proved to be no security. It is thought that the robbers, having previously found an opportunity to tamper with the chain, had taken passage from Kansas City and had slipped forward to the express car at St. Charles. There is, however, really no clue to them. Nothing appears to have been touched but the safe.

Richmond & Danville.

At the annual meeting in Richmond, Dec. 8, Col. R. T. Hubbard, a stockholder, offered a resolution postponing the election of directors to Jan. 17, in order to obtain time to look into the affairs of the company. Colonel Hubbard made a very bitter attack on the present management, charging that President Buford was incompetent, and that if there was not a change soon the road must pass into the hands of a receiver. Mr. Buford spoke in reply, and other stockholders also defended him, and the resolution was rejected.

Another resolution for a committee of five to examine the affairs of the company was adopted, as was also one directing the President and board to petition the General Assembly for a charter to extend the road from Richmond to Quantico or Washington.

Southern Railroad Indebtedness to the Government.

The Washington correspondent of the New York Daily Bulletin writes as follows: "One of the puzzling questions at the South since the war has been the matter of the indebtedness of the Southern railroads to the Government. The United States owned, by right of capture, etc., and by purchase for its use during the war, an immense amount of rolling stock and other railroad equipment, which was sold on credit to the various railroad companies. That was in 1865, in pursuance of Executive orders of Aug. 8 and Oct. 14. The indebtedness was in fact incurred through sale of railway material and railroad stock, and for repairs of the railroads during the war. The amount was since then as high as several million of dollars for principal and interest, notwithstanding the immense payments the companies made. At the close of the fiscal year ending June 30, 1874, the amount due to the Government from these sources was \$1,897,897.

"During the fiscal year ending June 30, 1875, interest accrued on this indebtedness, and expenses were incurred to the amount of \$112,653.44, and payment in cash and by military transportation and postal services were made and credited to the respective companies to the amount of \$40,281.69.

"The following is the state of the case as presented at the close of the fiscal year ended June 30, 1875:

Name of Company.	Value of property sold.	Total principal, interest and expenses unpaid July 1, 1875.
Alex., Loudoun & Hampshire	\$62,592 96	\$2,876 15
East Tennessee & Georgia	366,193 02	366,063 04
East Tennessee & Virginia	265,655 65	231,445 69
Edgefield & Kentucky	114,779 86	197,363 05
Knoxville & Kentucky	12,335 63	10,369 75
McMinnville & Manchester	46,508 54	82,316 96
Mobile & Ohio	505,143 70	65,243 43
Mem., Clarksville & Louisville	336,932 36	507,893 79
Memphis & Little Rock	115,673 89	115,359 84
Nashville & Chattanooga	1,566,551 75	1,787,740 33
Nashville & Northwestern	525,400 26	836,993 38
Nashville & Decatur	405,193 92	301,439 87
S. W. Branch Pac. R. R. of Mo.	87,115 24	.....
Selma, Rome & Dalton	185,276 49	151,502 43
Total	\$4,601,336 35	\$4,856,498 71

"The following companies, originally indebted, have been discharged from it all, through full payment or compromise. But settlements have been made in all cases except two, where the accounts were dropped because the companies became bankrupt. The two were the New Orleans & Ohio, and Mississippi, Gainesville & Tusculoo. These are the companies with settled accounts: Richmond, Fredericksburg & Potomac; Georgia Railroad & Banking Co.; Southwestern; Macon & Western; South Carolina; Muscogee; Petersburg; Memphis & Charleston; Mobile & Great Northern; New Orleans, Jackson & Great Northern; Mississippi Central; Virginia & Tennessee; Montgomery & West Point; Virginia Central; Rome; Western & Atlantic; Orange & Alexandria; Manassas Gap; Wilmington & Weldon; Alabama & Florida; New Orleans, Opelousas & Great Western; Norfolk & Petersburg; Western North Carolina; Atlantic & North Carolina; Macon & Brunswick; Selma & Meridian; San Antonio & Mexican Gulf; Washington, Alexandria & Georgetown; Memphis & Ohio; New Orleans & Ohio; Pacific Railroad of Missouri; Alabama & Florida, for repairs; Indianola; Mississippi & Tennessee; Alabama & Chattanooga; Mississippi, Gainesville & Tusculoo.

"The account of those indebted, then, stands as fixed at the date of June 30, 1875, at \$1,959,449, due the government. This does not include the indebtedness of the East Tennessee & Georgia, East Tennessee & Virginia, Knoxville & Kentucky, Nashville & Chattanooga, and the Nashville & Decatur companies, whose indebtedness of \$2,697,049 has been compromised for \$1,273,000, after the amounts due for military transportation had been deducted.

"Accounts to the credit of these companies remain unadjusted, as follows: Transportation of troops and property of the United States, \$39,191; postal services rendered to the United States, \$102,190."

Baltimore & Ohio.

The Baltimore Gazette says: "The long-contemplated improvements at Camden Junction, situated about 2½ miles

from the southern limits of the city, on the Baltimore & Ohio Railroad, have at last been completed. At this point a system of coaling facilities has been perfected for the supply of all engines on the first division or eastern terminus of the road, the completeness of which is not surpassed at any point on this or on any other railroad.

"The plan was at first designed by Col. Thomas R. Sharp, Master of Transportation, and has been perfected mainly in accordance with his ideas. There have been erected at this point 48 coal shutles, situated in the center of the road bed, with two tracks on either side. These shutles are at an altitude of 32 feet, with 24 outlets on either side. Each shuttle has a capacity of about five tons of coal, supplied from pockets immediately above them. The coal is dumped into the buckets directly from the cars, which are propelled by engines to the top of the structure, which is 200 feet in length and 40 in width, over a trestle work 1,000 feet in length with a rise from the ground of three feet in the hundred. As the coal is dumped from the car it falls upon a fender, thereby dividing each load and throwing it into pockets on either side of the fender. By this arrangement the tender of the engine is filled with coal in less than 30 seconds, which by the old system of coaling by hand required as many minutes and the labor of 20 men, while the new method requires the services of only four men. It will be seen that by this method a great saving of time and labor will result to the company.

"From this point there are four tracks to the Relay Station, seven miles west on the road, two of which are used for freight and two for passenger trains. The two center tracks run directly under and on either side of the coal shutles, so that a freight train going east and a passenger train west bound can be coaled at the same time. All freight engines are coaled here as they arrive east bound and run directly from the shutles to the point where the cars are delivered. They are then stalled at the different round-houses, and are ready at an instant's notice, thus obviating the delays which formerly occurred in the time required in coaling them by hand. The passenger engines, on the other hand, are coaled on their arrival from Camden Station, and the work is done in so short a time as to give no cause for complaint of delay on the part of travelers.

"The deep cut at this point has been improved in every way by artificial means, and what was known twelve months since as a mud cut, or the most unsightly point on the whole line of road, has been completely transformed and filled up with terraced embankments, and a substantial stone wall, six feet in height, built on either side. A most complete drainage system has also been inaugurated. From a former width of 25 feet the cut has been enlarged to a width of 50 feet, and the embankments, reaching a height of about 25 feet, have been carefully sodded. Commanding, as it does, the main southern entrance to the city by rail, the scenic improvements are of a character to be greatly appreciated. It is also said the company propose utilizing the property recently purchased of Thomas Winans, Esq., situated a short distance from this point, as stock yards and pasturage for stock which is transported by the company."

A line has been surveyed for a branch from Hancock, W. Va., to Berkeley Springs, a distance of about six miles. It will require the use of very heavy grades.

A special meeting of the stockholders was held in Baltimore Dec. 15. It was unanimously voted, 125,505 shares being represented, to ratify and confirm the agreement under which the Baltimore & Ohio is to guarantee principal and interest of the new consolidated mortgage for \$11,000,000 which is to be issued by the Pittsburgh, Washington & Baltimore (Pittsburgh & Connellsville) Company. It was also voted to ratify the agreement under which that company's road is to be worked by the Baltimore & Ohio. The President and directors were authorized and directed to take the necessary steps to carry both agreements into effect. The agreements have now been ratified by the stockholders of both companies.

St. Louis, Kansas City & Northern.

This company and the Kansas City, St. Joseph & Council Bluffs have established a through line between St. Louis and Omaha by way of Kansas City. Two trains are run, leaving St. Louis at 9 a. m. and 8:15 p. m., and arriving at Omaha 10 a. m. and 7:30 p. m. The distance is 477 miles.

A very sharp competition for passenger business is now going on between this company and the Missouri Pacific, but we believe there has been no cutting of rates as yet.

Detroit & Milwaukee.

Receiver Trowbridge reports his receipts and disbursements for October to the Court as follows:

Balance on hand Oct. 1.....	\$18,548 48
Receipts for the month.....	90,442 42
Total	\$108,990 90
Disbursements for the month.....	85,748 24

Balance, Nov. 1.....\$23,242 66

The receipts were \$4,694.18 in excess of the disbursements for the month.

Toronto, Grey & Bruce.

A special meeting of the stockholders is to be held in Toronto, Ont., Dec. 28, to vote on the question of authorizing the issue of debenture stock and terminable bonds, or either, in pursuance of an amendment to the company's charter lately obtained.

Chicago & Northwestern.

In the case of McConnell's heirs against the Chicago & Northwestern Company, involving the title to the lands upon which the company's depot north of the river in Chicago is located, the Secretary of the Interior has given his decision that the company has a valid title to the land.

Indianapolis, Bloomington & Western.

The first-mortgage Western extension bondholders will have an adjourned meeting at No. 20 Nassau street, New York, Dec. 28, at 1 p. m., to hear a further report from their committee.

Utica, Ithaca & Elmira.

On account of some difficulty as to the use of the Geneva, Ithaca & Athens track from Spencer to Van Ettenville, this company has begun the construction of a track of its own between the two places, a distance of 2½ miles. The running of through trains is postponed until this track can be finished.

Chesapeake & Ohio.

In view of the possible failure of the suit in the United States Circuit Court on account of want of jurisdiction, Judge Wellford, of the Virginia Circuit Court, to whom application was made, has appointed Mr. Williams C. Wickham, Vice-President of the company, Receiver, the appointment to take effect provided the United States Circuit Court shall relinquish jurisdiction of the case, when Mr. Tyson's term as Receiver will consequently terminate.

The question as to the jurisdiction of the United States Circuit Court in the foreclosure suit was argued in Alexandria, Dec. 20, Chief Justice Waite sitting with Circuit Judge Bond. After hearing Hon. Wm. M. Evaris and Mr. McFarland in favor of the motion to dismiss, the Court adjourned to Dec. 22, when Mr. Smoot was to begin against the motion.

Erie & Chicago Line.

The companies interested in the new line from New York to Chicago by the Erie, Atlantic & Great Western and Baltimore & Ohio have organized a fast freight line, to be known as the

Northwestern Dispatch, to run over the line. It will be a co-operative line and will start with 500 cars, the Baltimore & Ohio putting in 150, the Atlantic & Great Western 140 and the Erie 210. The cars are now being made ready. The change of gauge will be made at Mansfield, O., the crossing of the Atlantic & Great Western and the Lake Erie Division of the Baltimore & Ohio, where a Nutter steam car-hoist has been erected.

Memphis & Knoxville.

At a recent meeting of the Memphis Chamber of Commerce, it was stated in behalf of this company that sufficient subscriptions had been secured to grade, bridge and iron the road from Clifton, on the Tennessee River, to Pulaski; that the line was nearly graded from Bolivar to Henderson on the Mobile & Ohio; that subscriptions enough were made in Hardeman and Fayette counties, conditional on the extension of the road to Memphis, to build it through those counties, and that \$50,000 more would be enough to build it from Memphis to the Shelby County line. It was thereupon resolved that Memphis ought to raise that amount, and a committee was appointed to canvass for subscriptions.

Baltimore & Drum Point.

At a meeting held at Prince Frederick, Md., Dec. 15, the County Commissioners of Calvert County, Md., voted to complete the subscription of \$100,000 to this road which has been already authorized by vote of the people. The company has asked the Commissioners of Anne Arundel County to complete the \$200,000 subscription voted in that county, and has also petitioned the city of Baltimore to indorse \$500,000 of its bonds.

Prince Edward's Island.

Local papers state that the earnings are now averaging about \$12,000 per month and working expenses \$15,000, so that it is hardly profitable to the Provincial Government, which owns it. Large additions to the equipment have been contracted for, and a considerable increase of business is expected with the capacity for doing it.

The work of fencing the road has been begun, and contracts for 254 miles of post and rail or board fence, will soon be let. Tenders have also been asked for 16 miles of snow-fence, 10 feet high, to be put up at exposed points.

Atlantic, Mississippi & Ohio.

Notice is given that the interest on the various divisional bonds (Norfolk & Petersburg, South Side and Virginia & Tennessee) due Jan. 1, will be paid at the First National Bank, New York, and at the company's offices, Petersburg or Lynchburg, Va.

Atchison, Topeka & Santa Fe.

The land sales for November were 12,858 acres for \$83,932.95, an average of \$6.47 per acre. The total sales up to Nov. 30 were 505,580 acres for \$3,227,383.44, an average of \$5.20 per acre. The cash receipts of the Land Department for three months ending Nov. 30 were \$84,334.94; total cash receipts up to Nov. 30, \$987,569.10. Large sales have lately been made to parties of Meantime immigrants.

Queen Anne's & Kent.

At the recent annual meeting the gross earnings for the year just closed were reported as \$31,589, or \$877 per mile; net earnings, \$4,310. Out of this a dividend of 1 1/4 per cent. on the whole amount of stock (\$315,000) was declared, leaving a surplus of \$372.50 for the year.

Chesapeake & Ohio Canal.

At the regular monthly meeting of the board, the net earnings for November were reported as being \$92,491.94, an increase of \$11,959.45 over November of last year. The balance in bank Nov. 30 was \$92,180.37 and the accrued and uncollected revenue about \$30,000. The board appropriated a sum sufficient to pay the next overdue coupon on the preferred construction bonds, which will be payable at the banking house of Alexander Brown & Sons, Baltimore, on and after Dec. 29.

Keokuk & Kansas City.

As was to be expected after the attack made upon it by the papers, the attempt to place a loan in London for this company was a complete failure. The subscriptions were not sufficient in number to warrant an allotment. It is said that Mr. Vernon, agent for the company, will bring libel suits against the London Times and the Hour, to recover damages for alleged libelous statements against the company.

Central, of New Jersey.

The work on the new third and fourth tracks is being pushed, a considerable force being employed at several points about Somerville on the grading and bridge work.

Chicago, Rock Island & Pacific.

The construction of seven new first-class passenger cars has been begun in the Chicago shops. They are to be very handsomely finished and to be completed by May 1.

Lake Superior & Mississippi.

A meeting of the bondholders was to be held at No. 35 South Third street, Philadelphia, Dec. 22, for the purpose of considering a plan for the reorganization of the company.

Texas, Mississippi River & Northwestern.

A telegram from Little Rock, Ark., states that the sale of this company's lines under foreclosure of the separate mortgages took place there as advertised, Dec. 16. Both roads were bought for account of the bondholders, the Little Rock, Pine Bluff & New Orleans for \$35,000, and the Mississippi, Ouachita & Red River for \$25,000. The bondholders are in great part identical with those who bought the Little Rock & Fort Smith road at foreclosure sale, and who are now completing it.

Pacific, of Missouri.

The President has issued a call for a special meeting of the stockholders, to be held at No. 3 Broad street, New York, Dec. 28, at noon. The transfer books will be closed Dec. 24. A notice is appended to the call by President Pierce, of the Atlantic & Pacific, to the effect that a fair statement of the relations of the two companies will be presented at the meeting.

A large meeting of stockholders was held in New York Dec. 15, when the committee appointed at a previous meeting presented a report. The committee charge that four of the present directors hold no stock; that the President holds but 10 shares, and the 13 directors together only 199 shares. The present management has controlled the road openly since March, 1872, and was practically in control a year before that. The report then gives the statements of debt and earnings which have been heretofore published.

The bonds issued under the third mortgage, dated July 9, 1875, which contains a provision to retire by exchange the income and improvement bonds, amount to \$4,000,000, which, with \$800,000 additional, the present directors claim to have been expended upon the road in betterments and procuring additional property.

The Committee animadvert severely upon the management, and think that all the accounts and doings of the company should be examined closely and the facts reported to the stockholders; and, if the charges are made true, that suits should be commenced to recover back such money as has been wrongfully taken from the company, and to declare null and void such mortgages as they have wrongfully made upon the property; that the lease to the Atlantic & Pacific Railroad Company should be cancelled, and such damages obtained for a breach thereof as may be just and right under the circumstances.

The Committee think that the stock is worth really much more than its present market price, and that the present man-

agers have designedly depreciated it and have endeavored to promote their own interests by the foreclosure of the third mortgage.

The report was accepted, and the Committee was directed to make an assessment of 1 1/4 per cent. on all holders of the stock who may desire to join in the attempt to recover possession of the property. Mr. John T. Denny was appointed a member of the committee in place of A. W. Shepard, resigned, and a Finance Committee was appointed, consisting of R. L. Cutting, Wm. H. Morrell and Frank A. Otis.

Galveston, Harrisburg & San Antonio.

The San Antonio Construction Company has been organized to assist in completing this road to San Antonio. It will ask a subscription of \$30,000 in county bonds from Bexar County, Texas.

Ontario Southern.

By the terms of the agreement of reorganization this new company, formed by the bondholders who bought the Sudus Point & Southern road, will issue \$500,000 preferred and \$100,000 common stock. A mortgage for \$1,000,000 will be executed, under which \$700,000 of bonds will be issued to the old first-mortgage bondholders, and \$300,000 will be used to pay off receiver's certificates, improve the road, buy equipment, etc. The stock of the new company will be \$17,647, and the bonds \$29,412 per mile of road.

Philadelphia & Reading.

The stoppage of work usually made at this season of the year in the repair shops and rolling mills of this company was ordered last week, and the shops closed Dec. 18. They will start up again next month, though the date has not yet been fixed.

Portland, Saco & Portsmouth.

The adjourned meeting of stockholders was held in Kittery, Me., Dec. 14. The committee appointed at the previous meeting to consider the relations of the corporation to the Eastern Company presented two reports. The majority reported resolutions providing that stockholders accept 6 per cent. dividends for the present instead of 10 per cent., payment of the remaining 4 per cent. to be postponed for five years. This was rejected. The minority report, which was adopted, provides that the directors may agree with the Eastern Company to modify the lease so that the four ensuing semi-annual dividends shall be 3 instead of 5 per cent.; but the Eastern shall pay all taxes levied on the road, and the credit agreed to be loaned to the Eastern Company by the lease shall be henceforth limited to the \$250,000 now actually in use. Another resolution (reported unanimously) was adopted, providing that the accounts of the Portland, Saco & Portsmouth shall be kept separately and as a trust.

Wilmington & Reading.

The first-mortgage bondholders met in Philadelphia, Dec. 14, when the committee reported that the necessary action had been taken. On requisition of a number of bondholders, the trustees proceeded four months after the date of the default in interest, as required by the terms of the mortgage, to give formal notice to the company. The four months required after the date of this notice having expired Dec. 3, and the interest not having been paid, the principal, by the terms of the deed, became due, and a bill in foreclosure was promptly filed in the United States Circuit Court Dec. 4.

The first-mortgage bonds amount to \$1,200,000; second-mortgage bonds, \$1,700,000; stock, \$800,000, and floating debt \$500,000, a total of \$4,200,000. The foreclosure of the first-mortgage will cut off all the rest. The committee reported that the road was now earning, net, about enough to pay 3 per cent. on the first-mortgage bonds.

A plan for the purchase and re-organization of the company was submitted and adopted, and it was ordered that it be placed, with the Fidelity Trust Company in Philadelphia, for signature.

New York Central & Hudson River.

This company gives notice that it is now prepared to make its annual contracts for ties to be delivered during the season of 1876. Proposals will be received until Jan. 1 for the delivery of hewn white-oak ties only, in lots of from 1,000 to 50,000 and upward, at points on the line between New York and Buffalo and Suspension Bridge. Specifications and blank forms can be had from Mr. John C. Champion, Tie-Agent, Rome, N. Y.

The Coroner's jury on the two men who were killed in the recent collision at East Buffalo, after taking a large amount of testimony, brought in the following verdict:

"That J. E. Wood and Joseph Doty came to their deaths through the contemptible false economy practiced by the New York Central & Hudson River Railroad Company in not having sufficient employees on the road. We further blame the said company for the irregularity of running their trains on the said road; and further, for violating the city ordinances in running their cars more than six miles an hour within the city limits."

After the verdict had been rendered, the Coroner ordered the release of Engineer Waterman from custody.

Western & Atlantic.

The Atlanta Herald says: "The papers in a very important case, in which the State of Georgia presents a long bill against the United States Government, have just been made out and forwarded to Washington."

"Just after (or during) the war, the United States Government took charge of the Western & Atlantic Railroad and ran it for seven months in the interest of the Government, the Government taking all the receipts of the road."

"At the close of this seven months' seizure, the Government turned over the road to the State. In the meantime it had stocked it with cars, engines, etc., and when it returned it to the State, forced the State to pay an exorbitant price for the rolling stock that had been put upon the road during the seizure. The State settled perforce, paying the price demanded, and took possession of the road again. Gov. Ransom Smith now makes out a bill against the Government, and begs that the State be paid a fair rental for the road for the time it was used; and be repaid the difference between the money it paid for the rolling stock put upon the road by the Government, and the actual value of the said rolling stock."

"The claim will amount to several hundred thousand dollars, and it is believed that the Government will pay. A precedent justifying the payment was set last year, in which a railroad in Tennessee was settled with on just the basis that the Governor asks that Georgia shall be settled with."

"The claim is in the hands of experienced lawyers, who will prosecute it vigorously before Congress."

Quebec Railroad Grants.

The Toronto Monetary Times says: "In his budget speech Mr. Robertson, Provincial Treasurer, stated the policy of the Government with respect to railways. It is proposed to construct the following railways under the supervision of Commissioners and at the expense of the Government: North Shore Railway, 158 miles, with steel rails and four iron bridges, and the Piles Branch, 27 miles, estimated to cost together \$4,732,337; the Montreal, Ottawa & Western, 123 1/2 miles, with steel rails and iron bridges, and branch to St. Jerome, 14 miles, to cost \$3,601,649.95; line from Aymer to Portage du Fort, 50 miles, without rolling stock, at \$20,000 per mile, \$1,000,000, making a total for these lines of \$9,334,036.95. Adding to this the previous grants of the Province to railways, \$3,354,320, there is a grand total in the shape of grants to railways for which the Province is liable of \$13,155,556.78."

"Against this the subscriptions of the municipalities in aid of these lines is to be handed over to the Government, which bonds the contractors take at par."

"Making in all \$4,190,000 or less 15 per cent. discount, \$3,561,500. To this the Treasurer adds the net receipts for his late loan in England, \$3,607,068.35, making together \$6,059,333.35. Deducting this sum from the cost of railways given above (\$13,155,556.78) leaves \$7,102,325.42. It is intended to sell bonds on the railways constructed to the extent of one-third of their cost, or say 372 miles of railway at \$3,000 a mile—\$3,000,000. This leaves the sum of \$4,102,325.42 which the Province has to raise by way of loan. When this sum is borrowed the total indebtedness of the Province will be about \$8,000,000."

The Grand Trunk company has presented to the Quebec Legislature a long protest against these grants, especially that to the North Shore road. It sets forth that great sums of money have been invested in its road which is now bringing practically no return to a large portion of its owners, and it is now proposed to reduce its scanty profits still further by the establishment of parallel and competing lines. These lines must necessarily be unprofitable and must be maintained by public taxation, of which it must bear a share, thus being compelled to pay for its own impoverishment. The proposed grants are remonstrated against both as a matter of policy and as a breach of good faith on the part of the Government.

ANNUAL REPORTS.

Providence & Springfield.

This company owns a line from Providence, R. I., to Pascoag, 22.8 miles, with 16 miles of sidings. There are 18 stations on this short line, or one to every 1.26 miles. The equipment consists of 3 engines, 3 passenger, 1 baggage and 77 freight cars.

The capital account is as follows:

Stock (\$22,682 per mile).....	\$517,150 00
Bonds issued (\$19,737 per mile).....	450,000 00
Bonds deposited as security for land damages.....	50,000 00
Bills payable (\$12,232.37) and surplus.....	20,544 34

Total (\$45,513 per mile).....\$1,037,694 34

For the year ending Sept. 30 the work done was as follows:

Train mileage.....	48,148
Passengers carried.....	134,094
Passenger mileage.....	1,576,009
Tons of freight moved.....	29,893
Tonnage mileage.....	459,816

The traffic is entirely local and much of it is suburban, though the road serves several manufacturing villages.

The earnings of the year were as follows:

	1874-75.	1873-74.	Inc. or Dec.	P. c.
Passengers.....	\$42,078 99	\$40,345 14	Inc.	\$1,733 85 4.3
Freight.....	41,808 81	31,313 80	Inc.	10,495 01 33.5
Other sources.....	4,065 08	2,344 72	Inc.	1,720 36 72.4
Total.....	\$89,952 88	\$74,003 66	Inc.	\$15,949 22 18.9
Working expenses.....	45,066 83	56,183 07	Dec.	11,116 24 19.8
Net earnings.....	\$42,886 45	\$17,820 59	Inc.	\$25,065 46 140.7
Interest paid.....	32,574 08	17,164 47	Inc.	15,410 61 89.9
Surplus.....	\$10,311 97	\$666 12	Inc.	\$9,645 85 1,488.3
Gross earn. per mile.....	\$3,858	\$3,245	Inc.	\$613 18.9
Net.....	1,881	781	Inc.	1,100 140.7
Per cent. of expenses.....	51.24	75.92	Dec.	24.68 32.5

The freight tariff has been raised twice during the year, and the charges are now as high as they can be made without losing business.

A passenger house at Olney and four freight sheds at other points have been built and the road much improved by ditching and ballasting; one new water tank has been built. The freight accommodations in Providence are very inadequate, and efforts are being made to obtain more room.

Surveys have been made for an extension from Pascoag to Putnam, Conn. The estimated cost of this line is about \$340,000.

Washington City, Virginia Midland & Great Southern.

This company owns or works a line from Alexandria, Va., south by west through Lynchburg to Danville, 237 miles, with a branch from Warrenton Junction to Warrenton, 9 miles, and a line from Manassas Junction west to Strasburg, and thence south by west to Harrisonburg, 112 miles, with a branch to Front Royal, 1 mile, making 359 miles. Of the last line, however, 49 miles, from Strasburg Junction to Harrisonburg, is leased to and worked by the Baltimore & Ohio Company. Of the Alexandria-Danville line 23 miles, from Gordonsville to Charlottesville, is leased from the Chesapeake & Ohio and used in common with that company. On this line 66 miles, from Lynchburg to Danville, was not opened until May 1, 1874. The total line owned is 336 miles; worked 310 miles.

The company was formed by the consolidation of the Lynchburg & Danville and the Orange, Alexandria & Manassas, the latter having been itself a consolidation of the Orange & Alexandria and the Manassas Gap companies.

The debt of the company at the close of the last two fiscal years (Sept. 30) was as follows:

	1875.	1874.
Funded debt.....	\$6,687,454 00	\$6,475,559 00
Floating debt, secured.....	966,047 84	1,685,991 00
" " unsecured.....	582,092 64	—
Total debt.....	\$8,215,594 18	\$8,161,550 00

The funded debt increased \$191,895 during the year, and the floating debt decreased \$137,857.82, leaving a net increase of debt of \$54,044.16. The funded debt is \$19,844 and the floating debt \$4,608 per mile. The company is largely indebted to the Baltimore & Ohio, which holds a large amount of its bonds, and has made advances to it from time to time for several years.

For the year ending Sept. 30 the earnings and expenses were as follows:

	1874-75.	1873-74.	Inc. or Dec.	P. c.
Earn. includ'g rental of Valley Line.....	\$1,033,980 87	\$978,843 69	Inc.	\$55,136 88 5.6
Expenses.....	672,367 85	577,559 23	Inc.	94,808 62 9.5
Net earnings.....	\$401,612 71	\$401,284 46	Inc.	\$328 26 0.1
Gross earn. per mile.....	3,335 42	3,598 69	Dec.	263 27 7.3
Net earn. per mile.....	1,295 52	1,475 31	Dec.	179 79 13.2
Per ct. of expenses.....	61.16	59.00	Inc.	2.16 3.7

The expenses include \$41,144.44 trackage paid to the Chesapeake & Ohio road and to the Baltimore & Potomac from Alexandria to Washington. The net earnings were 6.02 per cent. on the funded debt.

A policy of the strictest economy has been pursued, but the general depression of business and still more the very low rates on through freight, caused by the sharp competition which has prevailed, have prevented any considerable increase of earnings. The low through rates are also chargeable with the increase in the proportion of expenses to earnings. It is hoped that with the improvement of business and the increase of through rates to a fair standard the present year may make a better showing.

The President renews the recommendation that the company build a new line of its own between Charlottesville and Gordonsville. The possession of such a line will enable the company to avoid the heavy trackage charges now paid to the Chesapeake & Ohio, and by its judicious location some additional local traffic may be secured.